

# SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1924

No. 40

THE UNITED STATES OF AMERICA, PETITIONER,

vs.

GULF REFINING COMPANY.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT  
OF APPEALS FOR THE EIGHTH CIRCUIT.

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**VOLUME TWO.**

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**IN THE UNITED STATES DISTRICT COURT FOR THE  
EASTERN DISTRICT OF OKLAHOMA.**

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PLEAS AND PROCEEDINGS BEFORE THE HONORABLE R. L. WILLIAMS, JUDGE OF THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF OKLAHOMA, PRESIDING IN THE FOLLOWING ENTITLED CAUSE:

**UNITED STATES OF AMERICA, *Plaintiff,***  
**Criminal** *vs.* **No. 3716**  
**GULF REFINING COMPANY, a Corporation, *Defendant.***

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**GULF REFINING COMPANY, a Corporation,**  
***Plaintiff in Error,***  
*vs.*  
**UNITED STATES OF AMERICA, *Defendant in Error.***

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**Appendix to Bill of Exceptions—**

Containing Exhibits 1, 2, 5 to 9, inclusive; 15, 22 to 25, inclusive; 36 to 42, inclusive; 45 to 47, inclusive; 50, 52 to 57, inclusive; 61, 62, 65, 66, 68, 69, 71, 75, 77, 78, 80, 81 to 95, inclusive; 97 to 103, inclusive; 110 to 115, inclusive; 120; 135 to 140, inclusive; 142 to 152, inclusive.

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**Government's Exhibit 1.**

In the District Court of the United States of America for the Eastern District of Oklahoma. United States of America, plaintiff, v. Gulf Refining Company, defendant. No. 3716.

**STIPULATION.**

The United States of America, plaintiff, and the Gulf Refining Company, defendant, for the purpose of the trial upon indictment in the above entitled cause, stipulate and agree

that the following matters and things will be admitted as if fully proven at trial:

1. Throughout the period from December 1, 1916, to May 31, 1919, and prior and subsequent thereto, St. Louis-San Francisco Railway Company was a corporation organized and existing under the laws of the State of Missouri; The Kansas City Southern Railway Company was a corporation organized and existing under the laws of the State of Missouri; Texarkana & Forth Smith Railway Company was a corporation organized and existing under the laws of the State of Texas; Midland Valley Railroad Company was a corporation organized and existing under the laws of the State of Arkansas; The Atchison, Topeka & Santa Fe Railway Company was a corporation organized and existing under the laws of the State of Kansas; Gulf, Colorado & Santa Fe Railway Company was a corporation organized and existing under the laws of the State of Texas; that each of the said railroads were common carriers doing an interstate business prior to noon December 28, 1917.

2. Throughout the aforesaid period, and prior thereto the Gulf Oil Corporation was a corporation organized and existing under the laws of the State of New Jersey; that the Gypsy Oil Company was a corporation under the laws of the State of Oklahoma; that the Gulf Refining Company was a corporation organized and existing under the laws of the State of Texas; that the Gulf Pipe Line Company was a corporation organized and existing under the laws of the State of Texas; and during said period all of the capital stock of the Gypsy Oil Company, Gulf Refining Company and the Gulf Pipe Line Company was owned and controlled by the Gulf Oil Corporation, except that the directors of each of the three last mentioned companies held shares in each of said company sufficient to qualify them as directors.

All admissions subject to relevancy, materiality and competency.

(Signed)      E. E. GANN

(Signed)      T. G. CHAMBERS

(Signed)      J. STANLEY PAYNE

*For the United States of America.*

(Signed)      JAMES B. DIGGS,

*For the Defendant.*

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**Government's Exhibit 2.**

For use in connection with the standard form of straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

**ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY.**

This Shipping Order must be legibly filled in, in ink, in indelible pencil, or in carbon, and retained by the Agent.

Shipper's No. \_\_\_\_\_. Agent's No. \_\_\_\_\_

Received, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Kiefer, Okla., December 17th, 1916, from Gypsy Oil Company Gasoline Department, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from....to....is in cents per 100 lbs.  
If times 1st....If 1st class....If 2nd class....If rule 25....  
If 3rd class....If rule 26....If rule 28....If 5th class....  
If 6th class....If special per....If special per....

(Mail address—Not for purposes of delivery.)

Consigned to Gulf Refining Company.

Destination, Port Arthur, State of Texas, County of.....

Route, Frisco to Ashdown KCS to Dest'n

Car Initial.....Car No.....

No.	Description of Articles and Special Marks		Weight. (Subject to correction)	Class or Rate	Check Column
1	Tank Car	Unrefined Naphtha			
GRCX	1030	8143			
	Outage 3"	94 8049	53123		

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Received \$. . . . . to apply in prepayment of the charges on the property described hereon. . . . .

Agent or Cashier.

Per . . . . . (The signature here acknowledges only the amount prepaid.)

Charges Advanced: \$. . . . .

Certain rates are based on value of articles shipped. Where classifications or commodity tariffs provide rates based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein to be . . . . . Shipper. Per . . . . .

Gypsy Oil Co.—Gasoline Dept. Shipper. Per W. Millard JHR

Agent must detach and retain this shipping order and must sign the original Bill of Lading.

(Stamped with rubber stamp) This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission. Gypsy Oil Co., Gasoline Dept., Shippers, Per (Signed) W. Millard, Supt. JHR.

Inflammable Placard Applied and Dome Cover Caution Card.

### CONDITIONS.

Sec. 1. The carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto, except as hereinafter provided.

No carrier or party in possession of any of the property herein described shall be liable for any loss thereof or damage thereto or delay caused by the act of God, the public enemy, quarantine, the authority of law, or the act or default of the shipper or owner, or for differences in the weights of grain, seed, or other commodities caused by natural shrinkage or discrepancies in elevator weights. For loss, damage, or delay caused by fire occurring after forty-eight hours (exclusive of legal holidays) after notice of the arrival of the property at destination or at port of export (if intended for export) has been duly sent or given, the carrier's liability shall be that of warehouseman only. Except in case of negligence of the carrier or party in possession (and the burden to prove freedom from such negligence shall be on the carrier or party in possession), the carrier or party in possession shall not be liable

of loss, damage, or delay occurring while the property is stopped and held in transit upon request of the shipper, owner or party entitled to make such request; or resulting from a defect or vice in the property or from riots or strikes. When in accordance with general custom, on account of the nature of the property, or when at the request of the shipper the property is transported in open cars, the carrier or party in possession (except in case of loss or damage by fire, in which case the liability shall be the same as though the property had been carried in closed cars) shall be liable only for negligence, and the burden to prove freedom from such negligence shall be on the carrier or party in possession.

Sec. 2. In issuing this bill of lading this company agrees to transport only over its own line, and except as otherwise provided by law acts only as agent with respect to the portion of the route beyond its own line.

No carrier shall be liable for loss, damage, or injury not occurring on its own road or its portion of the through route, nor after said property has been delivered to the next carrier, except as such liability is or may be imposed by law, but nothing contained in this bill of lading shall be deemed to exempt the initial carrier from any such liability so imposed.

Sec. 3. No carrier is bound to transport said property by any particular train or vessel, or in time for any particular market, or otherwise than with reasonable dispatch, unless by specific agreement indorsed hereon. Every carrier shall have the right in case of physical necessity to forward said property by any railroad or route between the point of shipment and the point of destination; but if such diversion shall be from a rail to a water route the liability of the carrier shall be the same as though the entire carriage were by rail.

The amount of any loss or damage for which any carrier is liable shall be computed on the basis of the value of the property at the place and time of shipment under this bill of lading, including the freight charges, if paid.

Except where the loss, damage, or injury complained of is due to delay or damage while being loaded or unloaded, or damaged in transit by carelessness or negligence, as conditions precedent to recovery, claims must be made in writing to the originating or delivering carrier within six months after delivery of the property (or, in case of export traffic, within nine months after delivery at port of export), or, in case of failure to make delivery, then within six months (or nine months in case of export traffic) after a reasonable time for delivery has elapsed; and suits for loss, damage, or delay shall be instituted only within two years and one day after delivery of the prop-

erty, or, in case of failure to make delivery, then within two years and one day after a reasonable time for delivery has elapsed.

Any carrier or party liable on account of loss of or damage to any of said property shall have the full benefit of any insurance that may have been effected upon or on account of said property, so far as this shall not avoid the policies or contracts of insurance.

Sec. 4. All property shall be subject to necessary coo-  
perage and baling at owner's cost. Each carrier over whose route cotton is to be transported hereunder shall have the privilege, at its own cost and risk, of compressing the same for greater convenience in handling or forwarding, and shall not be held responsible for deviation or unavoidable delays in procuring such compression. Grain in bulk consigned to a point where there is a railroad, public or licensed elevator, may, (unless otherwise expressly noted herein, and then if it is not promptly unloaded) be there delivered and placed with other grain of the same kind and grade without respect to ownership, and if so delivered shall be subject to a lien for elevator charges in addition to all other charges hereunder.

Sec. 5. Property not removed by the party entitled to receive it within forty eight hours (exclusive of legal holidays) after notice of its arrival has been duly sent or given may be kept in car, depot, or place of delivery of the carrier, or warehouse, subject to a reasonable charge for storage and to carrier's responsibility as warehouseman only, or may be, at the option of the carrier, removed to and stored in a public or licensed warehouse at the cost of the owner and there held at the owner's risk and without liability on the part of the carrier, and subject to a lien for all freight and other lawful charges, including a reasonable charge for storage.

The carrier may make a reasonable charge for the detention of any vessel or car, or for the use of tracks after the car has been held forty-eight hours (exclusive of legal holidays), for loading or unloading, and may add such charge to all other charges hereunder and hold such property subject to a lien therefor. Nothing in this section shall be construed as lessening the time allowed by law or as setting aside any local rule affecting car service or storage.

Property destined to or taken from a station, wharf, or landing at which there is no regularly appointed agent shall be entirely at risk of owner after unloaded from cars or vessels or until loaded into cars or vessels, and when received from or delivered on private or other sidings, wharves, or

landings, shall be at owner's risk until the cars are attached to and after they are detached from trains.

Sec. 6. No carrier will carry or be liable in any way for any documents, specie, or for any articles of extraordinary value not specifically rated in the published classification or tariffs, unless a special agreement to do so and a stipulated value of the articles are endorsed hereon.

Sec. 7. Every party, whether principal or agent, shipping explosive or dangerous goods, without previous full written disclosure to the carrier of their nature, shall be liable for all loss or damage caused thereby, and such goods may be warehoused at owner's risk and expense or destroyed without compensation.

Sec. 8. The owner or consignee shall pay the freight and all other lawful charges accruing on said property, and, if required, shall pay the same before delivery. If upon inspection it is ascertained that the articles shipped are not those described in this bill of lading, the freight charges must be paid upon the articles actually shipped.

Sec. 9. Except in case of diversion from rail to water route, which is provided for in section 3 hereof, if all or any part of said property is carried by water over any part of said route, such water carriage shall be performed subject to the liabilities, limitations, and exemptions provided by statute and to the conditions contained in this bill of lading not inconsistent with such statutes or this section, and subject also to the condition that no carrier or party in possession shall be liable for any loss or damage resulting from the perils of the lakes, sea, or other waters; or from explosion, bursting of boilers, breakage of shafts, or any latent defect in hull, machinery, or appurtenance; or from collision, stranding, or other accidents of navigation, or from prolongation of the voyage. And any vessel carrying any or all of the property herein described shall have the liberty to call at intermediate ports, to tow and be towed, and assist vessels in distress, and to deviate for the purpose of saving life or property.

The term "water carriage" in this section shall not be construed as including lighterage across rivers or in lake or other harbors, and the liability for such lighterage shall be governed by the other sections of this instrument.

Sec. 10. Any alteration, addition or erasure in this bill of lading which shall be made without an indorsement thereof hereon, signed by the agent of the carrier issuing this bill of

lading, shall be without effect, and this bill of lading shall be enforceable according to its original tenor.

(It is stipulated by the parties that Exhibit No. 2 consists of 36 shipping orders, of which the foregoing is typical, and the others need not be printed.)

### Government's Exhibit 5.

For use in connection with the standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

#### ST. LOUIS AND SAN FRANCISCO RAILROAD.

James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.

This Shipping Order must be legibly filled in, in ink, in indelible pencil, or in carbon, and retained by the Agent.

Shipper's No. . . . . Agent's No. . . . .

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Kiefer, Okla., November 2nd, 1916, from Gypsy Oil Company—Gasoline Department, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from . . . to . . . is in cents per 100 lbs.  
If times 1st . . . If 1st class . . . If 2nd class . . . If rule 25 . . .  
If 3rd class . . . If rule 26 . . . If rule 28 . . . If 4th class . . .  
If 5th class . . . If 6th class . . . If special per . . . If special  
per . . . .

(Mail address—Not for purposes of delivery)

Consigned to Gulf Refining Company, Destination, Port Arthur, State of Texas, County of . . . . . Route, Frisco to Ashdown, c/o K.C.S. Car Initial . . . . Car No. . . . .

No. Packages	Description of Articles and Special Marks	Weight, $\frac{1}{2}$ (Subject to correction)	Class or Rate	Check Column
6	Tank cars gasoline.			
GRCX	973	8056 Gals.	53050	F 9
	Outage	18		
GRCX	1017	8148 Gals.	53754	F 10
GRCX	1237	8099 Gals.	53453	F 11
GRCX	1251	8096 Gals.	53446	F 12
GRCX	1397	8099 Gals.	53453	F 13
GRCX	1718	8103 Gals.	53479	F 14

If charges are to be prepaid, write or stamp here, "To be Prepaid." . . . . Received \$ . . . . to apply in prepayment of the charges on the property described hereon. . . . . Agent or Cashier. Per . . . . (The signature here acknowledges only the amount prepaid.) Charges Advanced: \$ . . . .

Certain rates are based on value of articles shipped. Where Classifications or Commodity Tariffs provide rates based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein described to be . . . . . Shipper. Per . . . . .

Gypsy Oil Company—Gasoline Dep't. Shipper. Per W. Millard JM.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

(Rubber Stamp) This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation, according to the regulations prescribed by the Interstate Commerce Commission. W. Millard, JM.

#### Government's Exhibit 6.

For use in connection with the standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

ST. LOUIS AND SAN FRANCISCO RAILROAD.

James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.

This Shipping Order must be legibly filled in, in ink, in indelible pencil, or in carbon, and retained by the Agent.

Shipper's No. .... Agent's No. ....

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Kiefer, Okla., November 4th, 1916, from Gypsy Oil Company—Gasoline Dep't, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from....to....is in cents per 100 lbs.  
 If times 1st....If 1st class....If 2nd class....If rule 25....  
 If 3rd class....If rule 26....If rule 28....If 4th class....  
 If 5th class....If 6th class....If special per....If special per.....

(Mail address--Not for purposes of delivery)

Consigned to Gulf Refining Company, Destination, Port Arthur, State of Texas, County of.....Route, Frisco to Ashdown, c/o K.C.S. Car Initial..... Car No.....

No.	Description of Articles and Special Marks	Weight, (Subject to correction)	Class or Rate	Check Column
8	Tank cars gasoline.			
GRCX	222	6530 Gals.	43098	F 17
	242	6517 Gals.	43012	18
	251	6510 Gals.	42966	19
	915	8057 Gals.	53059	20
	Ontage	18		
	1143	8371 Gals.	55004	21
	Ontage	37		
	1245	8096 Gals.	53434	22
	1602	8023 Gals.	52952	23
	1619	8016 Gals.	52906	24

If charges are to be prepaid, write or stamp here, "To be

Prepaid.".....Received \$.....to apply in prepayment of the charges on the property described hereon. ....Agent or Cashier. Per....(The signature here acknowledges only the amount prepaid.) Charges Advanced: \$....

Certain rates are based on value of articles shipped. Where Classifications or Commodity Tariffs provide rates based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein described to be. ....Shipper. Per.....

Gypsy Oil Company—Gasoline Dep't. Shipper. Per W. Millard JN.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

(Rubber Stamp) This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation, according to the regulations prescribed by the Interstate Commerce Commission.

Gypsy Oil Co.—Gasoline Dept. Shippers. Per W. Millard, Supt. JN.

Inflammable placard applied and dome cover caution card.

#### **Government's Exhibit 7.**

For use in connection with the standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

#### **ST. LOUIS AND SAN FRANCISCO RAILROAD.**

James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.

This Shipping Order must be legibly filled in, in ink, in indelible pencil, or in carbon, and retained by the Agent.

Shipper's No..... Agent's No.....

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Kiefer, Okla., November 7, 1916, from Gypsy Oil Company—Gasoline Department, the property described below, in apparent good order, except as noted (contents and conditions of contents unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road,

otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from . . . to . . . is in cents per 100 lbs.  
 If times 1st . . . If 1st class . . . If 2nd class . . . If rule 25 . . .  
 If 3rd class . . . If rule 26 . . . If rule 28 . . . If 4th class . . .  
 If 5th class . . . If 6th class . . . If special per . . . If special per . . .

(Mail address—Not for purposes of delivery)

Consigned to Gulf Refining Company, Destination, Port Arthur, Texas, State of . . . , County of . . . Route, Frisco to Ashdown, c/o K.C.S. Car Initial . . . Car No. . .

No.	Description of Articles and Special Marks	Weight, (Subject to correction)	Class or Rate	Check Column
3	Tank cars gasoline.			
GRCX	368 7076 Gals. Net	46504	F 30	
	Outage 1½" 30	7046		
GRCX	1225 8095 Gals.	53427	F 31	
GRCX	1347 8090 Gals.	53394	F 32	

If charges are to be prepaid, write or stamp here, "To be Prepaid." . . . Received \$. . . to apply in prepayment of the charges on the property described hereon. . . . Agent or Cashier. Per . . . (The signature here acknowledges only the amount prepaid.) Charges Advanced: \$. . .

Certain rates are based on value of articles shipped. Where Classifications or Commodity Tariffs provide rates based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein described to be . . . Shipper. Per . . .

Gypsy Oil Company—Gasoline Dep't. Shipper. Per W. Millard JN.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

(Rubber Stamp) This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation, according to the regulations prescribed by the Interstate Commerce Commission.

Gypsy Oil Co.—Gasoline Dept. Shippers. Per W. Millard, Asst. Supt

Inflammable placard applied and dome cover caution card.

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### Government's Exhibit 8.

For use in connection with the standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

#### ST. LOUIS AND SAN FRANCISCO RAILROAD.

James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.

This Shipping Order must be legibly filled in indelible pencil, or in carbon, and retained by the Agent.

Shipper's No. . . . . Agent's No. . . . .

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Kiefer, Okla., November 11, 1916, from Gypsy Oil Company—Gasoline Department, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from . . . to . . . is in cents per 100 lbs.  
 If times 1st . . . If 1st class . . . If 2nd class . . . If rule 25 . . .  
 If 3rd class . . . If rule 26 . . . If rule 28 . . . If 4th class . . .  
 If 5th class . . . If 6th class . . . If special per . . . . If special per . . . .

(Mail address—Not for purposes of delivery)

Consigned to Gulf Refining Company, Destination, Port

Arthur, State of Texas, County of.....Route, Frisco to  
Ashdown, c/o K.C.S. Car Initial..... Car No.....

No.	Description of Articles and Special Marks	Weight, (Subject to correction)	Class or Rate	Check Column
1	Tank car gasoline.			
GRCX	392 7055 Gals. Net			
	Outage 1¾" 38	7017	46312	

If charges are to be prepaid, write or stamp here, "To be Prepaid."..... Received \$.....to apply in prepayment of the charges on the property described hereon. ....Agent or Cashier. Per.... (The signature here acknowledges only the amount prepaid.) Charges Advanced: \$....

Certain rates are based on value of articles shipped. Where Classifications or Commodity Tariffs provide rates based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein described to be..... Shipper. Per.....

Gypsy Oil Company--Gasoline Dep't. Shipper. Per W. Millard.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

(Rubber Stamp) This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation, according to the regulations prescribed by the Interstate Commerce Commission.

Gypsy Oil Co.--Gasoline Dept. Shippers. W. Millard, Asst. Supt.

Inflammable placard applied and dome cover caution card.

#### Government's Exhibit 9.

For use in connection with the standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

ST. LOUIS AND SAN FRANCISCO RAILROAD.

James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.

This Shipping Order must be legibly filled in, in ink, in indelible pencil, or in carbon, and retained by the Agent.

Shipper's No. .... Agent's No. ....

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Kiefer, Okla., November 10, 1916, from Gypsy Oil Company—Gasoline Department, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from .... to .... is in cents per 100 lbs.  
 If times 1st .... If 1st class .... If 2nd class .... If rule 25 ....  
 If 3rd class .... If rule 26 .... If rule 28 .... If 4th class ....  
 If 5th class .... If 6th class .... If special per .... If special per ....

(Mail address—Not for purposes of delivery)

Consigned to Gulf Refining Company, Destination, Port Arthur, State of Texas, County of ..... Route, Frisco to Sherman c/o H&TC to West Port Arthur. Car Initial. ....  
 Car No. ....

No.	Description of Articles and Special Marks	Weight, (Subject to correction)	Class or Rate	Check Column
3	Tank cars gasoline.			
GRCX	1020	8191 Gals.	54071	33
GRCX	1208	8083 Gals.	53348	33
GRCX	1319	8096 Gals.	53434	33

If charges are to be prepaid, write or stamp here, "To be Prepaid." .... Received \$.... to apply in prepayment of the charges on the property described hereon. .... Agent or Cashier. Per.... (The signature here acknowledges only the amount prepaid.) Charges Advanced: \$....

Certain rates are based on value of articles shipped. Where Classifications or Commodity Tariffs provide rates

based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein described to be. . . . . Shipper. Per. . . . .

Gypsy Oil Company—Gasoline Dep't. Shipper. Per W. Millardl JN.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

(Rubber Stamp) This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation, according to the regulations prescribed by the Interstate Commerce Commission.

Gypsy Oil Co.—Gasoline Dept. Shippers. Per W. Millard, Asst. Supt.

Inflammable placard applied and dome cover caution card.

### Government's Exhibit 15.

1916-1917-

Statement showing amounts freight charges paid by Gulf Refining Co. to T & F S R R covering shipments of unrefined naphtha or casinghead gasoline moving from Kansas-Oklahoma points to Port Arthur, Texas.

Keifer, Okla.

Car.	Date of Shipt.		Freight Bill.	Amount Paid	Date Paid
GRCX 1030	12-17-16	1788	12-29-16	\$104.80	1-15-17
GRCX 1001	12-4-16	586	12-10-16	105.00	1-6-17
GRCX 1072	12-4-16	678	12-10-16	104.73	1-6-17
GRCX 1209	12-4-16	589	12-11-16	104.14	1-6-17
GRCX 1239	12-4-16	587	12-10-16	104.24	1-6-17
GRCX 1602	12-4-16	585	12-10-16	103.25	1-6-17
GRCX 1607	12-4-16	590	12-10-16	102.16	1-6-17
GRCX 1014	12-4-16	591	12-10-16	105.03	1-6-17
GRCX 1763	12-4-16	588	12-10-16	104.25	1-6-17
GRCX 2006	12-4-16	592	12-10-16	104.84	1-6-17
GRCX 437	12-6-16	971	12-16-16	104.08	1-6-17
GRCX 621	12-6-16	970	12-16-16	103.02	1-6-17
GRCX 1039	12-6-16	967	12-16-16	104.98	1-6-17
GRCX 1143	12-6-16	969	12-16-16	107.29	1-6-17
GRCX 1113	12-7-16	968	12-16-16	104.35	1-6-17
GRCX 1378	12-7-16	966	12-16-16	104.16	1-6-17

Car.	Date of Shipt.	Freight Bill.	Amount Paid	Date Paid
GRCX 1621	12-7-16	965	12-16-16	103.16 1-6-17
GRCX 1111	12-21-16	83	1-4-17	104.34 1-26-17
GRCX 1619	12-21-16	82	1-4-17	103.17 1-26-17
GRCX 309	12-24-16	173	1-3-17	85.47 1-26-17
GRCX 445	12-27-16	278	1-5-17	104.12 1-26-17
GRCX 1080	12-27-16	280	1-5-17	105.34 1-26-17
GRCX 1385	12-27-16	279	1-5-17	104.15 1-26-17
GRCX 422	12-28-16	610	1-9-17	90.30 1-26-17
GRCX 1100	12-21-16	611	1-9-17	104.30 1-26-17
GRCX 1220	12-28-16	749	1-12-17	104.20 1-26-17
GRCX 168	12-29-16	612	1-9-17	89.24 1-26-17
GRCX 054	12-29-16	613	1-9-17	104.17 1-26-17
GRCX 1079	12-29-16	614	1-9-17	104.85 1-26-17
GRCX 1136	12-29-16	615	1-9-17	104.41 1-26-17
GRCX 1211	12-29-16	616	1-9-17	104.16 1-26-17
GRCX 1232	12-29-16	617	1-9-17	104.18 1-26-17
GRCX 1602	12-29-16	618	1-9-17	103.26 1-26-17
GRCX 1612	12-29-16	619	1-9-17	103.26 1-26-17
GRCX 1763	12-29-16	620	1-9-17	104.25 1-26-17
GRCX 2016	12-29-16	621	1-9-17	104.93 1-26-17
GRCX 961	1-3-17	810	1-13	103.47 1-26-17
GRCX 1024	1-3-17	811	1-13	104.83 1-26-17
GRCX 973	1-3-17	812	1-13	103.47 1-26-17
GRCX 2006	1-3-17	813	1-13	104.84 1-26-17
GRCX 1327	1-3-17	814	1-13	104.20 1-26-17
GRCX 428	1-8-17	993	1-16	105.21 2-3-17
GRCX 1278	1-8-17	994	1-16	104.14 2-3-17
GRCX 1347	1-8-17	995	1-16	104.12 2-3-17
GRCX 2025	1-8-17	996	1-16	104.93 2-3-17
GRCX 629	1-10-17	1920	1-29	97.86 2-23-17
GRCX 1358	1-10-17	1919	1-22	102.16 2-23-17
GRCX 1356	1-10-17	1920	1-22	104.14 2-23-17
GRCX 328	1-19-17	1667	1-26	90.89 2-3-17
GRCX 445	1-19-17	182	2-4	104.74 2-23-17
GRCX 1153	1-19-17	1668	1-26	104.63 2-23-17
GRCX 1359	1-19-17	1669	1-26	104.07 2-23-17
GRCX 2008	1-19-17	1670	1-26	104.87 2-23-17
GRCX 1155	1-20-17	1951	1-30	104.63 2-23-17
GRCX 1225	1-20-17	1952	1-30	104.18 2-23-17
GRCX 1243	1-20-17	1953	1-30	104.16 2-23-17
GRCX 1397	1-20-17	2037	1-31	104.23 2-23-17
GRCX 2027	1-20-17	1954	1-30	104.88 2-23-17
GRCX 2013	1-24-17	344	2-7	104.87 2-23-17
GRCX 1462	3-30-17	98	4-2	104.17 5-3-17
GRCX 1061	3-5-17	705	3-10	104.57 3-31-17

Car.	Date of Shipt.		Freight Bill.		Amount Paid	Date Paid
GRCX 1155	3-5-17	704	3-10	104.69	3-31-17	
GRCX 1607	3-5-17	703	3-10	103.16	3-31-17	
GRCX 950	3-8-17	1034	3-14	103.72	4-13-17	
GRCX 1507	3-8-17	1035	3-14	154.74	4-13-17	
GRCX 1038	3-10-17	1295	3-17	104.91	4-13-17	
GRCX 1206	3-10-17	1294	3-17	104.11	4-13-17	
GRCX 332	3-13-17	1666	3-21	90.93	4-13-17	
GRCX 1029	3-13-17	1521	3-20	105.87	4-13-17	
GRCX 1064	3-13-17	1665	3-21	104.82	4-13-17	
GRCX 309	4-21-17	2435	4-29	85.75	5-15-17	
GRCX 332	4-21-17	2213	4-26	90.93	5-15-17	
GRCX 1029	4-21-17	2212	4-26	105.86	5-15-17	
GRCX 422	5-8-17	960	5-14	90.66	5-29-17	
GRCX 428	5-8-17	958	5-14	105.22	5-29-17	
GRCX 1178	5-8-17	961	5-14	104.64	5-29-17	
GRCX 620	5-8-17	955	5-14	103.20	5-29-17	
GRCX 1083	5-8-17	956	5-14	104.77	5-29-17	
GRCX 1237	5-8-17	957	5-14	104.24	5-29-17	
GRCX 1368	5-8-17	959	5-14	104.16	5-29-17	
GRCX 428	6-2-17	507	5-14	105.21	6-27-17	
GRCX 1083	6-2-17	506	5-14	104.77	6-27-17	
GRCX 1201	6-10-17	1191	6-16	104.02	7-14-17	
GRCX 1206	6-10-17	1333	6-18	104.11	7-14-17	
GRCX 1225	6-10-17	1189	6-16	104.18	7-14-17	
GRCX 1624	6-10-17	1190	6-16	103.13	7-14-17	
GRCX 1727	6-10-17	1185	6-16	104.26	7-14-17	
GRCX 1852	6-10-17	1183	6-16	105.15	7-14-17	
GRCX 1854	6-10-17	1182	6-16	105.23	7-14-17	
GRCX 1856	6-10-17	1184	6-16	105.26	7-14-17	
GRCX 1858	6-10-17	1181	6-16	105.19	7-14-17	
GRCX 1950	6-10-17	1186	6-16	103.13	7-14-17	
GRCX 1951	6-10-17	1187	6-16	103.10	7-14-17	
GRCX 1852	7-16-17	1582	7-22	105.15	8-6-17	
GRCX 1855	7-16-17	1581	7-22	105.26	8-6-17	
GRCX 1947	7-16-17	1770	7-25	103.13	8-6-17	
GRCX 1946	7-17-17	1580	7-22	103.10	8-6-17	
GRCX 1033	8-8-17	930	8-14	105.19	8-28-17	
GRCX 1206	8-8-17	929	8-14	104.10	8-28-17	
GRCX 1271	8-8-17	1042	8-12	104.10	8-28-17	
GRCX 1706	8-8-17	933	8-14	104.22	8-28-17	
GRCX 1708	8-8-17	928	8-14	104.26	8-28-17	
GRCX 924	8-13-17	1360	8-16	103.73	9-4-17	
GRCX 1721	8-13-17	1357	8-16	104.26	9-4-17	
GRCX 1728	8-13-17	1356	8-16	104.26	9-4-17	
GRCX 1774	8-13-17	1359	8-16	104.25	9-4-17	

Car.	Date of Shipt.	Freight Bill.	Amount Paid	Date Paid
GRCX 1798	8-13-17	1358	8-16	104.25 9-4-17
GRCX 1368	8-14-17	1624	8-19	104.16 9-4-17
GRCX 1865	8-14-17	1628	8-19	105.22 9-4-17
GRCX 1245	8-24-17	2326	8-29	104.20 9-27-17
GRCX 1710	9-12-17	1319	9-19	104.25 10-19-17
GRCX 1786	9-12-17	1320	9-19	104.25 10-19-17
GRCX 1978	9-12-17	1318	9-19	103.14 10-19-17
GRCX 1127	10-20-17	2232	1-1	103.69 11-19-17
GRCX 1366	10-25-17	219	1-4	104.16 12-8-17
GRCX 1774	10-25-17	218	1-4	104.25 12-8-17
GRCX 1978	10-25-17	215	1-4	103.14 12-8-17
GRCX 625	11-24-17	2491	1130	103.61 12-27-17
GRCX 630	11-24-17	2489	7-30	103.68 12-27-17
GRCX 2103	1-25-18	191	2-4	104.05 2-21-18
GRCX 2108	1-25-18	186	2-2	104.05 2-21-18
GRCX 2115	1-25-18	185	2-2	103.93 2-21-18
GRCX 2119	1-25-18	187	2-2	104.05 2-21-18
GRCX 2160	1-25-18	183	2-2	104.05 2-21-18
GRCX 2172	1-25-18	190	2-4	104.02 2-21-18
GRCX 2177	1-25-18	189	2-4	104.06 2-21-18
GRCX 2182	1-25-18	188	2-2	104.00 2-21-18
GRCX 2189	1-25-18	184	2-2	103.98 2-21-18
GRCX 2198	1-25-18	192	2-4	104.00 2-21-18
GRCX 1400	2-16-18	1728	2-26	104.17 3-11-18
GRCX 1708	3-14-18	1691	3-22	104.26 4-13-18
GRCX 2106	3-14-18	1698	3-22	103.96 4-13-18
GRCX 2107	3-14-18	1762	3-23	104.04 4-13-18
GRCX 2116	3-14-18	1694	3-22	104.04 4-13-18
GRCX 2120	3-14-18	1695	3-22	103.96 4-13-18
GRCX 2149	3-14-18	1696	3-22	104.04 4-13-18
GRCX 2154	3-14-18	1697	3-22	103.97 4-13-18
GRCX 2159	3-14-18	1700	3-22	103.98 4-13-18
GRCX 2197	3-14-18	1699	3-22	103.96 4-13-18
GQTX 401	4-1-18	552	4-8	103.58 5-1-18
GQTX 406	4-1-18	551	4-8	103.54 5-1-18
GQTX 436	4-1-18	550	4-8	103.50 5-1-18
GQTX 503	4-1-18	554	4-8	106.18 5-1-18
GQTX 554	4-1-18	553	4-8	106.73 5-1-18
GRCX 1250	4-26-18	88	5-3	104.22 5-31-18
GRCX 1430	4-26-18	87	5-3	104.18 5-31-18
GRCX 1816	4-26-18	91	5-3	105.70 5-31-18
GRCX 1854	4-26-18	90	5-3	105.23 5-31-18
GRCX 2123	4-26-18	89	5-3	104.00 5-31-18
GRCX 2166	4-26-18	93	5-3	103.97 5-31-18
GRCX 2197	4-26-18	92	5-3	103.96 5-31-18

Statement showing amount of freight charges paid by Gulf Refining Co. to T & F S covering shipments of unrefined naphtha or casinghead gasoline from Jenks, Okla., to Port Arthur, Texas.

Car.	Date of Shipt.		Freight Bill.		Amount Paid	Date Paid
GRCX 422	2-21-17	2080	2-28	90.64	3-31-17	
GRCX 1718	2-22-17	2082	2-28	104.29	3-31-17	
GRCX 434	3-25-17	2483	3-31	105.27	4-13-17	
GRCX 1369	3-25-17	2482	3-31	104.13	4-13-17	
GRCX 1321	3-29-17	497	4-8	104.23	5-3-17	
GRCX 1370	3-29-17	432	4-7	104.09	5-3-17	
GRCX 1178	4-12-17	1436	4-19	104.64	5-12-17	
GRCX 1209	4-13-17	1435	4-19	104.15	5-12-17	
GRCX 434	4-30-17	586	5-9	105.27	5-29-17	
GRCX 1229	5-1-17	587	5-9	104.07	5-29-17	
GRCX 1850	6-10-17	1172	6-16	105.21	7-14-17	
GRCX 1853	6-10-17	1171	6-16	105.17	7-14-17	
GRCX 1232	6-19-17	1757	6-24	104.17	7-14-17	
GRCX 1974	6-19-17	1758	6-24	103.05	7-14-17	
GRCX 1268	7-6-17	755	7-12	104.18	8-6-17	
GRCX 1270	7-6-17	754	7-12	104.09	8-6-17	
GRCX 449	7-7-17	1011	7-15	90.87	8-6-17	
GRCX 1037	7-7-17	1012	7-15	105.42	8-6-17	
GRCX 1220	7-11-17	1180	7-17	104.20	8-6-17	
GRCX 1743	7-11-17	1181	7-17	104.21	8-6-17	
GRCX 1957	7-15-17	1451	7-20	103.26	8-6-17	
GRCX 1983	7-15-17	1452	7-20	103.04	8-6-17	
GRCX 1956	7-21-17	2009	7-28	103.08	8-11-17	
GRCX 1959	7-21-17	2008	7-28	103.02	8-11-17	
GRCX 1245	8-7-17	927	8-11	104.20	8-28-17	
GRCX 2022	8-8-17	1156	8-14	104.94	9-4-17	
GRCX 1729	8-15-17	1629	8-19	104.22	9-4-17	
GPTX 600	9-23-17	2122	9-28	103.64	11-7-17	
GRCX 1071	9-23-17	2123	9-28	105.72	11-7-17	
GRCX 1624	10-2-17	585	10-7	103.14	11-7-17	
GRCX 1983	10-2-17	584	10-7	103.03	11-7-17	
GRCX 1254	10-9-17	1082	10-12	104.14	11-7-17	
GRCX 1864	10-9-17	1083	10-12	105.19	11-7-17	
GRCX 926	10-20-17	2132	10-27	103.69	11-19-17	
GRCX 1981	10-25-17	186	11-4	103.07	12-8-17	
GRCX 1265	10-27-17	187	11-4	104.09	12-8-17	
GRCX 2022	10-27-17	185	11-4	104.91	12-8-17	
GRCX 2124	1-2-18	2027	1-22	103.96	2-3-18	
GRCX 2183	1-2-18	2026	1-22	103.97	2-3-18	
GRCX 2150	6-7-18	651	6-14	103.91	7-2-18	
GRCX 2151	6-7-18	652	6-14	103.98	7-2-18	

Car.	Date of Shipt.	Freight Bill.	Amount Paid	Date Paid
GRCX 1335	5-1-18	568 5-9	104.13	5-31-18
GRCX 1712	5-1-18	567 5-9	104.26	5-31-18
GRCX 924	5-9-18	1305 5-19	103.73	5-31-18
GRCX 2178	5-9-18	1304 5-19	103.91	5-31-18
GRCX 2119	5-28-18	162 6-4	104.04	6-25-18
GRCX 2171	5-28-18	163 6-4	103.98	6-25-18
GRCX 764	6-20-18	1481 6-27	103.53	7-13-18
GRCX 1211	9-13-18	1172 9-19	128.20	9-25-18
GRCX 1446	9-13-18	1174 9-19	128.20	9-25-18
GRCX 1381	10-3-18	872 10-14	128.14	10-17-18
GRCX 1967	10-3-18	871 10-14	126.86	10-17-18
GRCX 2110	11-1-18	634 11-11	128.01	11-15-18
GRCX 2249	11-1-18	633 11-12	127.70	11-30-18
GRCX 1946	12-23-18	1715 12-28	126.91	1-6-19
GRCX 2245	12-23-18	1716 12-28	127.86	1-6-19
GRCX 1930	1-10-19	662 1-15	127.50	1-21-19
GRCX 2110	1-10-19	661 1-15	128.01	1-21-19
GRCX 2200	1-23-19	1398 1-29	127.86	2-1-19
GRCX 2230	1-23-19	1397 1-29	127.86	2-1-19
GRCX 2207	2-1-19	317 2-8	127.83	2-15-19
GRCX 2240	2-1-19	316 2-8	127.86	2-15-19
GPTX 401	2-12-19	969 2-18	127.48	2-24-19
GRCX 2155	2-12-19	970 2-18	127.99	2-24-19
GRCX 2185	3-12-19	1074 3-17	127.99	3-19-19
GRCX 2223	3-12-19	1073 3-17	127.75	3-19-19
GRCX 2120	1-1-18	714 1-9	103.96	1-24-18
GRCX 1072	1-28-18	482 2-8	171.96	2-27-18
GRCX 1957	1-28-18	228 2-5	171.66	2-27-18
GRCX 1277	4-17-18	1607 4-23	104.16	5-16-18
GRCX 1431	4-17-18	1608 4-23	104.12	5-16-18
GRCX 1607	4-18-18	1760 4-24	103.17	5-16-18
GRCX 1974	4-18-18	1761 4-24	103.16	5-16-18
GRCX 2101	5-15-18	1543 5-22	103.99	6-15-18
GRCX 2120	5-15-18	1542 5-22	103.96	6-15-18

Statement showing amount of freight charges paid by Gulf Refining Co. to T & F S R R covering shipments of unrefined naphtha or casing head gasoline from Drumwright, Okla. to Port Arthur, Texas.

Car.	Date of Shipt.	Freight Bill.	Amount Paid	Date Paid
GRCX 1228	6-16-18	1287 6-24	109.43	7-13-18
GRCX 1708	6-16-18	1288 6-24	109.60	7-13-18
GRCX 1726	6-16-18	1289 6-24	109.55	7-13-18

Car.	Date of Shipt.	Freight Bill.	Amount Paid	Date Paid
GRCX 1744	6-16-18	1290 6-24	109.54	7-13-18
GRCX 2199	6-16-18	1291 6-24	109.30	7-13-18
GRCX 1116	7-19-18	1577 7-25	136.15	8-15-18
GRCX 1383	9-3-18	550 9-11	133.59	9-20-18
GRCX 1728	9-3-18	551 9-11	133.67	9-20-18
GRCX 2119	9-3-18	552 9-11	133.39	9-20-18
GRCX 2160	9-3-18	626 9-12	133.39	9-19-18
GRCX 1225	9-5-18	703 9-13	133.57	9-19-18
GRCX 1455	9-5-18	699 9-13	133.49	9-19-18
GRCX 1470	9-5-18	700 9-13	133.62	9-19-18
GRCX 1611	9-5-18	698 9-13	132.28	9-19-18
GRCX 2113	9-5-18	697 9-13	133.29	9-19-18
GRCX 2170	9-5-18	702 9-13	133.39	9-19-18
GRCX 2170	9-5-18	701 9-13	133.27	9-19-18
GRCX 251	9-19-18	1764 9-28	107.42	10-7-18
GRCX 745	10-4-18	950 10-16	133.29	10-19-18
GRCX 2112	10-4-18	949 10-16	133.37	10-19-18
GRCX 1707	10-30-18	308 11-7	133.67	11-14-18
GRCX 2173	12-2-18	596 12-13	133.22	12-18-18
GRCX 2183	12-2-18	597 12-13	133.29	12-18-18
GRCX 2157	12-6-18	763 12-14	133.19	12-21-18
GRCX 1976	12-6-18	764 12-14	132.10	12-23-18
GRCX 2194	12-10-18	1079 12-19	133.50	12-26-18
GRCX 1762	12-19-18	1644 12-30	133.62	1-3-19
GRCX 2207	12-19-18	1645 12-30	133.16	1-3-19
GRCX 1956	12-30-18	1589 12-30	132.15	1-1-19
GRCX 2185	1-23-19	1477 1-31	133.32	2-4-19
GRCX 2171	1-23-19	1473 1-31	133.30	2-4-19
PCX 1549	1-23-19	1478 1-31	132.48	2-4-19
GRCX 1956	1-8-19	682 1-16	132.15	1-21-19
GRCX 2177	1-8-19	681 1-15	133.35	1-21-19
GRCX 2178	1-8-19	685 1-16	133.22	1-21-19
GRCX 2196	1-8-19	684 1-16	133.37	1-21-19
GRCX 2248	1-8-19	683 1-16	133.07	1-21-19
GRCX 2209	1-2-19	414 1-10	133.07	1-7-19

### Government's Exhibit 22.

For use in connection with the Standard Form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908. Including provisions to conform with the requirements of the Cummins Amendment to the Act to Regulate Commerce, effective June 2, 1915.

## MIDLAND VALLEY RY.

This Shipping Order must be legibly filled in, in ink, or indelible pencil, or in carbon, and retained by the Agent.

Shipper's No. .... Agent's No. ....

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Jenks, Okla., 4-30, 1918, from Totem Gasoline Co. the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from....to....is in cents per 100 lbs.  
 If times 1st....If 1st class....If 2d class....If 3d class....  
 If 4th class....If 5th class....If A class....If B class....  
 If C class....If D class....If E class....If Special per....  
 If Special per....

(Mail address—Not for purposes of delivery.)

Consigned to The Texas Co. c/o T. Reiber, Supt. Destination Port Arthur, State of Texas, County of..... Route M. V. Panama c/o KCS. Car Initial T. C. X. Car No. 2777.

Tank Cars	Description of Articles and Special Marks	Gals.	WtSub. to Cor.	Class or Rate	Check Column
-----------	---	-------	----------------	---------------	--------------

1	Gasoline 4 Inflammable Placards Applied	8092	53385		
4	Liquid Petroleum Gas Placards Applied. Special Caution Placards Applied to Dome.				

Dome Capacity.	Shell Capacity.
Inches in Dome at	Temp.
2½ inches out of shell at 53° Temp.	

If charges are to be prepaid, write or stamp here, "To be Prepaid." ..... Received \$. .... to apply in payment of the charges on the property described hereon ..... Agent or Cashier.

Per.....(The signature here acknowledges only the amount prepaid). Charges Advanced \$. .....

This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

Totem Gasoline Co. Shipper. Per Geo. Anderson.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

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### Government's Exhibit 23.

For use in connection with the Standard Form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908. Including provisions to conform with the requirements of the Cummins Amendment to the Act to Regulate Commerce, effective June 2, 1915.

### MIDLAND VALLEY RY.

This Shipping Order must be legibly filled in, in ink, or indelible pencil, or in carbon, and retained by the Agent.

Shipper's No..... Agent's No.....

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Jenks, Okla., 4-27, 1918, from Totem Gasoline Co. the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from. . .to. . . is in cents per 100 lbs.  
 If times 1st . . . If 1st class. . . If 2d class. . . If 3d class. . .  
 If 4th class. . . If 5th class. . . If A class. . . If B class. . .  
 If C class. . . If D class. . . If E class. . . If Special per. . .  
 If Special per. . .

(Mail address—Not for purposes of delivery.)

Consigned to The Texas Co. c/o T. Reiber, Supt. Destin-

ation Port Arthur, State of Texas, County of..... Route  
M. V. Panama KCS. Car Initial T. C. X. Car No. 633.

Tank Cars	Description of Articles and Special Marks	Gals.	WtSub. to Cor.	Class or Rate Column	Check
1	Gasoline 4 Inflamable Placards Applied	10671	70429		
	Liquified Petroleum Gas. Inflamable Placards Applied.				
4	Special Caution Placards Applied to Dome.				
	Dome Capacity	Shell Capacity.			
	Inches in Dome at	Temp.			
	2½ inches out of shell at 59°	Temp.			

(Rubber Stamp) 2% Vacant Space Allowed Per I. C. C.  
Ruling.

If charges are to be prepaid, write or stamp here, "To be  
Prepaid.".....Received \$......to apply in payment of the  
charges on the property described hereon..... Agent or  
Cashier.

Per.....(The signature here acknowledges only the  
amount prepaid). Charges advanced \$......

This is to certify that the above articles are properly de-  
scribed by name and are packed and marked and are in proper  
condition for transportation according to the regulations pre-  
scribed by the Interstate Commerce Commission.

Totem Gasoline Co, Shipper. Per Geo. Anderson.

Agent must detach and retain this Shipping Order and  
must sign the Original Bill of Lading.

#### Government's Exhibit 24.

For use in connection with the Standard Form of Straight  
Bill of Lading approved by the Interstate Commerce Commis-  
sion by Order No. 787 of June 27, 1908. Including provisions  
to conform with the requirements of the Cummins Amend-  
ment to the Act to Regulate Commerce, effective June 2, 1915.

MIDLAND VALLEY RAILROAD COMPANY.

"ARKANSAS RIVER ROUTE"

This Shipping Order must be legibly filled in, in ink, or  
indelible pencil, or in carbon, and retained by the Agent.

Shipper's No..... Agent's No.....

Receive, subject to the classifications and tariffs in effect

on the date of issue of this Shipping Order, at Kiefer, Okla., April 1st, 1918 from Crosbie & Gillespie the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from Kiefer, Okla., to Port Arthur, Texas, 33c collect is in cents per 100 lbs.

If times 1st....If 1st class....If 2d class....If 3d class....  
If 4th class....If 5th class....If A class....If B class....  
If C class....If D class....If E class....If Special per....  
If Special per....

(Mail address—Not for purposes of delivery.)

Consigned to The Texas Co. c/o T. Reiber, Supt. Destination Port Arthur, State of Texas, County of..... Route MV-KCS. Car Initial. As below. Car No....

No. Packages	Description of Articles and Special Marks	Weight, (Subject to correction)	Class or Rate	Check Column
TCX 2226	8250 Gallons Gasoline	54450		1412
TCX 3113	8055 Gallons Gasoline	53163		1412
Inflammable placards O. R. L.				

If charges are to be prepaid, write or stamp here, "To be Prepaid.".....Received \$.....to apply in prepayment of the charges on the property described hereon. ....Agent or Cashier. Per....(The signature here acknowledges only the amount prepaid.) Charges Advanced: \$....

Certain rates are based on value of articles shipped. Where Classifications or Commodity Tariffs provide rates based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein described to be.....Shipper. Per.....

The Texas Co., Shipper. Per I. J. Shields.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

### Government's Exhibit 25.

For use in connection with the Standard Form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908. Including provisions to conform with the requirements of the Cummins Amendment to the Act to Regulate Commerce, effective June 2, 1915.

MIDLAND VALLEY RAILROAD COMPANY.

"ARKANSAS RIVER ROUTE"

This Shipping Order must be legibly filled in, in ink, or indelible pencil, or in carbon, and retained by the Agent.

Shipper's No. .... Agent's No. ....

Receive, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order, at Kiefer, Okla., April 27, 1918, from Crosbie & Gillespie the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The rate of freight from Kiefer, Okla., to Port Arthur, Texas, 33c collect is in cents per 100 lbs.

If times 1st. . . . If 1st class. . . . If 2d class. . . . If 3d class. . . .  
If 4th class. . . . If 5th class. . . . If A class. . . . If B class. . . .  
If C class. . . . If D class. . . . If E class. . . . If Special per. . . .  
If Special per. . . .

(Mail address—Not for purposes of delivery.)

Consigned to The Texas Co. c/o T. Reiber, Supt. Destination Port Arthur, State of Texas, County of. . . . . Route MV-Panama-KCS. Car Initial as below. Car No. ....

No. Packages	Description of Articles and Special Marks	Weight, (Subject to correction)	Class or Rate	Check Column
TCX 4691	8044 Gallons Gasoline	53090		
TCX 4435	8260 Gallons Gasoline	54516		
TCX 4678	8052 Gallons Gasoline	53143		
TCX 3068	8053 Gallons Gasoline	53150		
TCX 3058	8055 Gallons Gasoline	53163		

Inflammable placards and white dome placards applied.  
O. R. L.

If charges are to be prepaid, write or stamp here, "To be Prepaid." Collect. Received \$. . . . . to apply in prepayment of the charges on the property described hereon. . . . . Agent or Cashier. Per. . . . (The signature here acknowledges only the amount prepaid). Charges advanced \$. . . . .

This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

The Texas Co., Shipper. Per I. J. Shields.

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading.

### **Government's Exhibit 36.**

I. C. C. No. 1048—Cancels I. C. C. No. 999. Only three supplements to this Tariff will be in effect at any time.

### **SOUTHWESTERN LINES' TARIFF NO. 26-T**

Cancels Southwestern Lines' Tariff No. 26-S

For Individual Lines' Tariff Numbers, Current and Cancelled, see page 3.

Local, joint and proportional tariff applying on classes and commodities between points in Oklahoma named on pages 76 to 82, inclusive, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive.

Governed, except as otherwise provided herein, by Western Classification No. 52 (R. C. Fyfe's I. C. C. No. 10, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that

are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued June 10th, 1914. *Effective July 24th, 1914*; except as noted on page 170 where reference is made to Note G; on page 58 where reference is made to (20); on pages 53 and 69 where reference is made to (18); on pages 5, 80, 134, 136, 141, 142, 150, 152, 165, 169, 175, 176, 178 and in item 1572 where reference is made to (21); in items 1422, 1428, 1638, 1680, 1698 and 1710 where reference is made to (8); in item 1764 where reference is made to (9); in item 1614 where reference is made to (10); in item 1536 where reference is made to Note C; in item 2358 where reference is made to Note A; in item 2546 where reference is made to Note A; in item 3024 where reference is made to Note A; in item 2606; and in items 1542, 1548, 3036, 3042, 3048, and 3054 where reference is made to (22).

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 21600.

(Stamped:) Public File. Amended by-I. C. C. No. 1186; Effective 5-2-1917. Cancelled by-I. C. C. No. 1226; Effective 5-10-18. Received; Interstate Commerce Commission; 41005; Jun 12 1914; Division of Tariffs.

\* \* \* \* \*

Pages 4, 5 and 6.

## PARTICIPATING CARRIERS

Railway Abbreviations	NAMES OF CARRIERS	Under Powers of Attorney to F. A. Leland Form FX 1 No.	*
A. T. & S. F.	Atchison, Topeka & Santa Fe Ry	33	*
K. C. S.	The Kansas City Southern Ry. Co.	24	*
St. L. & S. F.	St. Louis & San Francisco R. R. Co.	100	*
	James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.		
Mid. Val.	Midland Valley R. R. Co.	18	*
St. L. S. F. & T.	St. Louis, San Francisco & Texas Ry. Co.	23	*
	Avery Turner, G. H. Schleyer, Receivers (Corrected)		
T. & N. O.	Texas & New Orleans R. R. Co.	12	*
H. & T. C.	Houston & Texas Central R. R. Co.	16	*
T. & Ft. S.	Texarkana & Ft. Smith Ry. Co.	20	*

Page 59.

GEOGRAPHICAL LIST OF TEXAS POINTS FROM AND TO WHICH  
RATES APPLY SHOWING GROUP BASES APPLICABLE

Index Nos.	STATIONS ON	Group Bases
	T. & N. O. R. R.	
5836	West Port Arthur.....	8
5838	Port Arthur.....	8

Page 62.

7056	T. & Ft. S. Ry. Port Arthur. . . . .	8
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Page 78.

GEOGRAPHICAL LIST OF OKLAHOMA POINTS FROM \* \* \* WHICH  
RATES APPLY.

Index Nos.	STATIONS ON	Group Basis
	Midland Valley R. R.	
9186	Jenks. . . . .	*

Page 81.

## GEOGRAPHICAL LIST OF OKLAHOMA POINTS FROM \* \* \* WHICH RATES APPLY.

Index Nos.	STATIONS ON
	St. L. & S. F. R. R.
10100	Kiefer. . . . .

Page 170.

## COMMODITY RATES.

On	From
OIL: Petroleum Crude Oil and Petroleum Fuel Oil; in straight or mixed carloads; minimum weight 26,000 pounds, except that shipments transported in tank cars will be subject to Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues * * *	Following points in Oklahoma * Kiefer
To points in Texas shown on pages 171 to 174, inclusive.	*

Pages 173 and 174.

For Application see page 170.

TO POINTS IN TEXAS SHOWN BELOW, \* \* \* RATES IN CENTS PER 100 POUNDS.

Station.	Rates
Port Arthur. . . . .	15
West Port Arthur. . . . .	15

Page 189.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
1536	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Cir-	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

cular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \*\*\* on the articles described in Items 2490 to 2546 or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive of tariff, as amended.

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COMMODITY RATES.

Item No.	COMMODITIES Carloads, ***	FROM	TO	Rates in Cents per 100 lbs. *
2546	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	* Kiefer *	Following points in Texas * Port Arthur *	33

*Supplement No. 2 to I. C. C. No. 1048.* Cancels Supplement No. 1. Supplement No. 2 contains all changes from the original Tariff that are effective on the date hereof.

### **SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 2.*

Cancels Supplements No. 1.

Supplement No. 2 contains all changes from the original Tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of Tariff and page 5 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of Tariff, and page 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 52 (R. C. Fyfe's I. C. C. No. 10, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F' (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

**Special Notice**—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued July 18th, 1914. *Effective August 24th, 1914; ex-*

cept as noted on page 7; in item 2546a where reference is made to Note A; in item 2025; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 21690.

(Stamped:) Public File. Received; Interstate Commerce Commission; 47800; Jul 18 1914; Division of Tariffs.

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Page 9.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
No.	Carloads, * * *	*	
1536a cancels 1536	<p><b>OILS:</b> Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....</p> <p><b>NOTE A.</b>—Rates will not apply * * * on the articles described in Items 2490 to 2546a, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174 inclusive of tariff as amended.</p>	<p>Following points in Oklahoma * Kiefer *</p>	<p>Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13</p>

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs.
2546a	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification	* Okla. Kiefer,"	Following points in Texas	33
2546	1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	*	West Port Arthur, Tex. (See Note A.) Port Arthur	33

*Supplement No. 4 to I C. C. No. 1048.* Cancels Supplements Nos. 2 and 3. Supplement No. 4 contains all changes from the original Tariff that are effective on the date hereof.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 4.*

**Cancels Supplements Nos. 2 and 3.**

Supplement No. 4 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, and page 5 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, and page 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 52 (R. C. Fyfe's I. C. C. No. 10, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate

points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued August 18th, 1914. *Effective September 24th, 1914*; except as noted on page 18 where reference is made to Note H; on page 17 where reference is made to Note I; on page 17 where reference is made to Note B; on page 7 where reference is made to (25); and in items 1392a, 2982a, 2898a, 2952a, 2958a and 2964a; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 21801.

(Stamped:) Public File. Received; Commerce Commission; 55053; Aug 20 1914; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed			
1536a		Following points in Oklahoma	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
cancels		Kiefer	
1536		*	

in item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \*\*\* on the articles described in Items 2490 to 2546a, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of tariff as amended. Reissue; effective August 24, 1914, in Supplement No. 2.

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# COMMODITY RATES.

Item No.	COMMODITIES Carloads, ***	FROM	TO	Rates in Cents per 100 lbs.
2546a	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	Reissue; effective August 24, 1914, in Supplement No. 2, except as noted.	Following points in Texas; * Port Arthur * West Port Arthur, Tex. (See Note A.)	33
2546	NOTE A.—Reissue; effective July 24, 1914, in Supplement No. 2.	* Kiefer, Okla. *		

Supplement No. 8 to I. C. C. No. 1046. Cancels Supplement No. 4. Supplements Nos. 7 and 8 contain all changes from the original tariff that are effective on the date hereof.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

Supplement No. 8.

Cancels Supplement No. 4.

Supplements Nos. 7 and 8 contain all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 7 of supplement 7 and page 10 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 6 of supplement No. 7 and pages 5 to 7 herein.

Governed, except as otherwise provided herein, by Western Classification No. 52 (R. C. Fyfe's I. C. C. No. 10, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued October 29th, 1914. *Effective December 1st, 1914;* except as noted in individual items.

Issued by F. A. Leland, agent, St. Louis, Mo.

Authority No. 22129.

(Stamped:) Public File. Received; Interstate Commission; 72692; Oct 30 1914; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
	Carloads, * * *	*	*
1536a can- cels 1536	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification.....</p> <p>NOTE A.—Rates will not apply * * * on the articles described in Items 2490 to 2546a, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of tariff as amended. Reissue; effective August 24, 1914, in Supplement No. 2.</p>		
		Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

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## COMMODITY RATES.

Item No.	COMMODITIES	FROM	TO	Rates in Cents per 100 lbs.
	Carloads, * * *			*
2546a Can- cels 2546	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	Reissue; effective August 24, 1914, in Supplement No. 2, except as noted. * Kiefer, Okla. *	Following points in Texas; * Port Arthur * West Port Arthur, Tex. (See Note A.)	33
	NOTE A.—Reissue; effective July 24, 1914, in Supplement No. 2.			

*Supplement No. 9 to I. C. C. No. 1048.* Cancels Supplements Nos. 7 and 8. Supplement No. 9 contains all changes from the original tariff that are effective on the date hereof.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 9.*

Cancels Supplements Nos. 7 and 8.

Supplement No. 9 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, pages 12 and 13 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 7 to 9 inclusive, herein.

Governed, except as otherwise provided herein, by Western Classification No. 52 (R. C. Fyfe's I. C. C. No. 10, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F' (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued November 17th, 1914. *Effective December 24th, 1914;* except as noted on page 27 where reference is made to

note B; page 40 where reference is made to note L; pages 34 to 37, inclusive; pages 41 to 43, inclusive; and in items 2622a, 2628a, 2634a, 2637a; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 22145.

(Stamped:) Public File. Received; Interstate Commerce Commission; 76815; Nov 18 1914; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*

Item No.	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
	Carloads, * * *	*	*
1536a cancels 1536	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.		Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification.

NOTE A.—Rates will not apply \* \* \* on the articles described in Items 2490 to 2546a, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of tariff as amended. Reissue; effective August 24, 1914, in Supplement No. 2.

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs
	* * * * *	* * * * *	* * * * *	*
2546a	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	Reissue; effective August 24, 1914, in Supplement No. 2, except as noted.	Following points in Texas; * Port Arthur * West Port Arthur, Tex. (See Note A.)	33
2546	NOTE A.—Reissue; effective July 24, 1914, in Supplement No. 2.	* Kiefer, Okla. *		

*Supplement No. 10 to I. C. C. 1048.* Cancels Supplement No. 9. Supplement No. 10 contains all changes from the original tariff that are effective on the date hereof.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 10.*

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, pages 12 and 13 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 7 to 9 inclusive, herein.

Governed, except as otherwise provided herein, by Western Classification No. 52 (R. C. Fyfe's I. C. C. No. 10, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued November 30, 1914. *Effective January 5, 1915;* except as noted in items 1970a and 2950a; on page 33; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 22211.

(Stamped:.) Public File. Received; Interstate Commerce Commission; 78200; Nov 28 1914; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536a cancels 1536	OILS: Petroleum Oil and its Products. * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Items 2490 to 2546a, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of tariff as amended Reissue; effective August 24, 1914, in Supplement No. 2.

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## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs.
* * * * *	* * * * *	* * * * *	* * * * *	*
2546a	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	Reissue; effective August 24, 1914, in Supplement No. 2, except as noted.	Following points in Texas; * Port Arthur * West Port Arthur, Tex. (See Note A.)	33
2546	NOTE A.—Reissue; effective July 24, 1914, in Supplement No. 2.	Kiefer, Okla. *		

*Supplement No. 14 to I. C. C. No. 1048.* Cancels Supplements Nos. 4; and 7 and 8 except those portions under suspension. Supplements Nos. 10 and 14 contain all changes from the original tariff that effective on the date hereof. Supplement No. 11 suspends portions of Supplements Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 14.*

Cancels Supplements Nos. 4; and 7 and 8 except those portions under suspension.

Supplements Nos. 10 and 14 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 11 suspends portions of Supplements Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, and pages 12 and 13 of Supplement No. 10, and page 5 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, and pages 7 to 9 inclusive, of Supplement No. 10, and page 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued January 14, 1915. *Effective February 23, 1915*; except as noted in items 20a, 1536b, 2490b, 2496a, 2508a, 2511a, 2916b, 3024a and page 15; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 22388.

(Stamped:) Public File. Received; Interstate Commerce Commission; 8843; Jan 16 1915; Division of Tariffs.

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Page 18.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *

Effective January 23, 1915. Issued under special permission of the Interstate Commerce Commission No. 30563 of December 17th, 1914.

1536b cancels 1536a	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *: in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof. . . . .	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
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Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A.—Rates will not apply \* \* \* on the articles described in Items 2490a to 2546a, \* \* \* or reissues thereof, from and to the points specified in said items, nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff as amended.

*Supplement No. 16 to I. C. C. No. 1048.* Cancels Supplements Nos. 9, except those portions under suspension; 14 and 15. Supplements Nos. 10 and 16 contains all changes from the original tariff that are effective on the date hereof. Supplement No. 11 suspends portions of Supplements Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 16.*

Cancels Supplements Nos. 9, except those portions under suspension; 14 and 15. Supplements Nos. 10 and 16 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 11 suspends portions of Supplements Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, and pages 12 and 13 of Supplement No. 10, and page 6 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, and pages 7 to 9, inclusive, of Supplement No. 10, and page 6 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

**Special Notice**—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued February 10, 1915. *Effective March 25, 1915;*

except as noted in items 1440a, 1446b, 1540, 1898, 1944b, 3028, 3030, 3032; in item 3024b where reference is made to note A; on pages 3 and 14 where reference is made to (43); and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 22512.

(Stamped:) Public File. Received; Interstate Commerce Commission; 19942; Feb 11 1915; Division of Tariffs.

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Page 22.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
No.	Carloads, * * *	*	

Reissue; effective January 23, 1915,  
in Supplement No. 14.

1536b can- cels 1536a	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
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Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Items 2490-a to 2546a, \* \* \* or reissues thereof, from and to the points specified in said items, nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff as amended.

\* \* \* \* \*

*Supplement No. 18 to I. C. C. No. 1048.* Cancels Supplements Nos. 9, except those portions under suspension; and 17. Supplements Nos. 10, 16 and 18 contain all changes from the original Tariff that are effective on the date hereof. Supplement No. 11 suspends portions of Supplements Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

### SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

#### *Supplement No. 18.*

Cancels Supplements Nos. 9, except those portions under suspension; and 17. Supplements Nos. 10, 16 and 18 contain all changes from the original Tariff that are effective on the date hereof. Supplement No. 11 suspends portions of Supplements Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, tariff, and pages 12 and 13 of Supplement No. 10, and page 6 of Supplement No. 16, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, and pages 7 to 9 inclusive, of Supplement No. 10, and page 6 of Supplement No. 16.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject

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to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued February 17, 1915. *Effective March 28, 1915*; except as noted in item 1536c where reference is made to note C; in item 2496b where reference is made to note B; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.  
Authority No. 22537.

(Stamped:) Received; Interstate Commerce Commission; 22015; Feb 20 1915; Division of Tariffs.

\* \* \* \* \*

Page 5.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, \* \* \*.

Item	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
No.	Carloads, * * *	*	*

1536c can- cels 1536b	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof . . . . .	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
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Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A.—Rates will not apply \* \* \* on the articles described in Items 2490c to 2546a, \* \* \*, or reissues thereof from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.

*Supplement No. 19 to I. C. C. No. 1048.* Cancels Supplements Nos. 16 and 18. Supplements Nos. 10 and 19 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 11 suspends portions of Supplements Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

### SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

#### *Supplement No. 19.*

Cancels Supplements Nos. 16 and 18. Supplements Nos. 10 and 19 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 11 suspends portions of Supplement Nos. 7 and 8. Supplement No. 12 suspends portions of Supplement No. 9. Supplement No. 13 suspends portions of Supplement No. 10.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, and pages 12 and 13 of Supplement No. 10, and page 8 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, and pages 7 to 9 inclusive, of Supplement No. 10, and page 7 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority

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granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued March 26th, 1915. *Effective May 3rd, 1915*; except as noted in item 1536d where reference is made to note D; in item 2496c where reference is made to note C; in item 2511b where reference is made to note; in item 3024c where reference is made to note A; on page 20 where reference is made to note M; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 22621.

(Stamped:) Received; Interstate Commerce Commission; 29123; Mar 26 1915; Division of Tariffs.

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Page 27.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536d can- cels 1536c	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *: in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A.—Rates will not apply \* \* \* on the articles described in Items 2490c to 2546a, \* \* \*, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.

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*Supplement No. 24 to I. C. C. No. 1048.* Cancels Supplements Nos. 10, except those portions under suspension; and 23. Supplements No. 19 and 24 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 20 suspends portions of Supplement No. 18. Supplement No. 21 suspends portions of Supplements Nos. 7, 8, 9 and 10. See page 2 of Supplement No. 20 for corrections affecting Supplement No. 19. See page 3 of Supplement No. 21 for corrections affecting Supplements Nos. 9 and 10.

#### SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

##### *Supplement No. 24.*

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 8 of Supplement No. 19 and pages 14 and 15 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 7 of Supplement No. 19 and pages 9 to 11 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate

points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

**Special Notice**—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued May 18, 1915. *Effective June 24, 1915*; except as noted in items 1992b; in item 2010b; on page 14 where reference is made to (48); and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 22813.

(Stamped:) Received; Interstate Commerce Commission; 42683; May 22 1915; Division of Tariffs.

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Page 51.

# COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs.
* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
2546a	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	Reissue; effective August 24, 1914, in Supplement No. 2, except as noted.	Following points in Texas; * Port Arthur * West Port Arthur, Tex. (See Note A.)	33
2546	NOTE A.—Reissue; effective July 24, 1914, in Supplement No. 2.	Kiefer, Okla. *		

*Supplement No. 26 to I. C. C. No. 1048.* Cancels Supplement No. 25. Supplements Nos. 19, 24 and 26 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 20 suspends portions of Supplement No. 18. Supplement No. 21 suspends portions of Supplements Nos. 7, 8, 9 and 10. See page 2 of Supplement No. 20 for corrections affecting Supplement No. 19. See page 3 of Supplement No. 21 for corrections affecting Supplements Nos. 9 and 10.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 26.*

Cancels Supplement No. 25. Supplements Nos. 19, 24 and 26 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 20 suspends portions of Supplement No. 18. Supplement No. 21 suspends portions of Supplements Nos. 7, 8, 9 and 10. See page 2 of Supplement No. 20 for corrections affecting Supplement No. 19. See page 3 of Supplement No. 21 for corrections affecting Supplements Nos. 9 and 10.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 8 of Supplement No. 19 and pages 14 and 15 of Supplement No. 24 and page 4 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 7 of Supplement No. 19 and pages 9 to 11 of Supplement No. 24, and page 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.



**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 27.*

Cancels Supplements Nos. 19 and 26. Supplements Nos. 24 and 27 contain all changes from tariff that are effective on the date hereof. Supplement No. 20 suspends portions of Supplement No. 18. Supplement No. 21 suspends portions of Supplements Nos. 7, 8, 9 and 10. See page 2 of Supplement No. 20 for corrections affecting Supplement No. 19. See page 3 of Supplement No. 21 for corrections affecting Supplements Nos. 9 and 10.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, pages 14 and 15 of Supplement No. 24, and page 12 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 9 to 11 of Supplement No. 24, and page 12 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

**Special Notice**—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

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Issued July 20, 1915. *Effective September 1, 1915*; except as noted in item 2508c; and other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 23048.

(Stamped:) Received; Interstate Commerce Commission; 56905; Jul 20 1915; Division of Tariffs.

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Page 31.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536e cancels 1536d	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A.—Rates will not apply \* \* \* on the articles described in items \* \* \* 2546, \* \* \*, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.

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Page 45.

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. *
	* * * * *	* * * * *	* * * * *	*
2546b	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues.....	* Kiefer, Okla. *	Following points in Texas; * Port Arthur * West Port Arthur	33
2546a	Reissue; effective July 24, 1915, in Supplement No. 26.			

*Supplement No. 31 to I. C. C. No. 1048.* Cancels Supplements Nos. 24 and 30. Supplements Nos. 27 and 31 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 21 suspends portions of Supplements Nos. 7, 8, 9 and 10. Supplement No. 28 suspends portions of Supplement No. 9. Supplement No. 29 suspends portions of Supplement No. 18. See page 3 of Supplement No. 21 for corrections affecting Supplements Nos. 9 and 10.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 31.*

Cancels Supplements Nos. 24 and 30. Supplements Nos. 27 and 31 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 21 suspends portions of Supplements Nos. 7, 8, 9 and 10. Supplement No. 28 suspends portions of Supplement No. 9. Supplement No. 29 suspends portions of Supplement No. 18. See page 3 of Supplement No. 21 for corrections affecting Supplements Nos. 9 and 10.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 12 of Supplement No. 27 and pages 9 and 10 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 12 of Supplement No. 27 and pages 11 and 12 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

# 1010 GULF REFINING COMPANY, A CORPORATION, U.S.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued September 14, 1915. *Effective October 26, 1915*; except as noted in item 73 and on page 16 where reference is made to (95); and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 23259.

(Stamped:) Received; Interstate Commerce Commission; 67919; Sep 15 1915; Division of Tariffs.

Page 42.

## COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536f can- cels 1536e	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A. — Rates will not apply on the articles described in items \* \* \* 2546, \* \* \*, or reissues thereof from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.

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*Supplement No. 36 to I. C. C. No. 1048* Cancels Supplements Nos. 8 (see (102)); 9 (see (102)), except those portions as per Supplement No. 28; 10 (see (102)); 33 see (102)); and 35. Supplements Nos. 27, 31 and 36 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 28 suspends portions of Supplement No. 9. Supplement No. 29 suspends portions of Supplement No. 18. See page 2 herein for corrections affecting Supplement No. 9.

#### **SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

##### *Supplement No. 36.*

Cancels Supplements Nos. 8 (see (102)); 9 (see (102)), except those portions as per Supplement No. 28; 10 (see (102)); 33 see (102)); and 35. Supplements Nos. 27, 31 and 36 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 28 suspends portions of Supplement No. 9. Supplement No. 29 suspends portions of Supplement No. 18. See page 2 herein for corrections affecting Supplement No. 9.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 12 of Supplement No. 27, pages 9 and 10 of Supplement No. 31 and pages 5 to 7 herein, and points in Texas, also Texarkana, Tex.-Ark., named on

pages 43 to 62, inclusive, of tariff, page 12 of Supplement No. 27, pages 11 and 12 of Supplement No. 31 and pages 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued December 20, 1915. *Effective February 1, 1916*; except as noted above where reference is made to (102); in item 1536g, where reference is made to note E; in item 2916e; and in other individual items. For explanation of (102) see page 10 herein.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 23622.

(Stamped:) Received; Interstate Commerce Commission; 3618; Dec 21 1915; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. •
1536g cancels 1536f	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
	Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .		
	NOTE A.—Rates will not apply * * * on the articles described in items * * * 2546b, * * *, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended. •		

*Supplement No. 37 to I. C. C. No. 1048.* Cancels pages 34 to 37, inclusive, of Supplement No. 9 (see (107)); Supplements Nos. 28 (see (107)); and 36. This completes the cancellation of Supplement No. 9. Supplements Nos. 27, 31 and 37 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 29 suspends portions of Supplement No. 18.

## SOUTHWESTERN LINES' TARIFF NO. 26-1

For individual lines' Tariff numbers, see page 2.

*Supplement No. 37.*

Cancels pages 34 to 37, inclusive, of Supplement No. 9 (see (107)); Supplements Nos. 28 (see (107)); and 36. This completes the cancellation of Supplement No. 9. Supplements Nos. 27, 31 and 37 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 29 suspends portions of Supplement No. 18.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 12 of Supplement No. 27, pages 9 and 10 of Supplement No. 31 and pages 5 to 7 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 12 of Supplement No. 27, pages 11 and 12 of Supplement No. 31 and page 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued January 8, 1916. *Effective February 19, 1916*; except as noted above where reference is made to (107); on pages 18 to 21, inclusive; and in other individual items. For explanation of (107) see page 10 herein.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 23682.

(Stamped:) Received; Interstate Commerce Commission; 7489; Jan 8 1916; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
No.	Carloads, * * *	*	*
1536g cancels 1536f	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .</p> <p>NOTE A.—Rates will not apply * * * on the articles described in items * * * 2546b, * * *, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, as amended. Reissue; * * * effective February 1, 1916, in Supplement No. 36.</p>		
		Following points in Oklahoma	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
		Kiefer	

Supplement No. 38 to I. C. C. No. 1048. Cancels Supplement No. 37. Supplements Nos. 27, 31 and 38 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 29 suspends portions of Supplement No. 18.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 38.*

Cancels Supplement No. 37. Supplements Nos. 27, 31 and 38 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 29 suspends portions of Supplement No. 18.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 12 of Supplement No. 27, pages 9 and 10 of Supplement No. 31 and pages 6 to 8 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 12 of Supplement No. 27, pages 11 and 12 of Supplement No. 31 and page 5 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued January 21, 1916. *Effective March 3, 1916*; except as noted on pages 3 and 10 where reference is made to (109); in (110); in item 2916f; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 23722.

(Stamped:) Received; Interstate Commerce Commission; 10050; Jan 22 1916; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536g cancels 1536f	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .</p> <p>NOTE A.—Rates will not apply * * * on the articles described in items * * * 2546b, * * *, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.</p> <p>Reissue; * * * effective Feb. 1, 1916, in Supplement No. 36.</p>		
		Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Supplement No. 40 to I. C. C. No. 1048. Cancels Supplements Nos. 18, 27, 29 and 31. This completes the cancellation of Supplement No. 18. Supplements Nos. 38 and 40 contain all changes from the original tariff that are effective on the

date hereof. Supplement No. 3<sup>d</sup> suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 39 for corrections affecting Supplements Nos. 37 and 38.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 40.*

Cancels Supplements Nos. 18, 27, 29 and 31. This completes the cancellation of Supplement No. 18. Supplements Nos. 38 and 40 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 39 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 39 for corrections affecting Supplements Nos. 37 and 38.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 10 of Supplement No. 38 and page 26 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 9 of Supplement No. 38 and pages 19 to 21 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Inter-

state Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued March 21, 1916. *Effective May 2, 1916*; except as noted on page 54 where reference is made to note L; in items 1440d; in item 1536h where reference is made to note G; in item 1614a where reference is made to note A; in item 1944f; in item 2238 where reference is made to note A; in item 2496f where reference is made to note D; in item 2548a where reference is made to note C; in item 3021b where reference is made to note A; in item 3024e where reference is made to note B; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 23842.

(Stamped:) Received; Interstate Commerce Commission; 19841; Mar 22 1916; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM	TO Texas Groups Nos. 6 to 13  Rates in Cents per 100 lbs.
1536h cancels 1536g	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification.....

NOTE A.—Rates will not apply \* \* \* on the articles described in items \* \* \* 2546b \* \* \* or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in



sues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued May 2, 1916. *Effective June 13, 1916*; except as noted on page 10 where reference is made to note L; in item 1480b where reference is made to note B; in item 1770a where reference is made to note B; in item 2142g where reference is made to note F; in item 2145c where reference is made to note C; in item 2496g where reference is made to note D; in item 3000b where reference is made to note A; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24023.

(Stamped:) Received; Interstate Commerce Commission; 28751; May 4 1916; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536l cancels 1536h	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....</p> <p>NOTE A.—Rates will not apply * * * on the articles described in Items * * * 2546b * * *, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174 inclusive of tariff as amended.</p>		<p>Following points in Oklahoma * Kiefer * Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13</p>

*Supplement No. 44 to I. C. C. No. 1048.* Cancels Supplement No. 42. Supplements Nos. 38, 40 and 44 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 44.*

Cancels Supplement No. 42. Supplements Nos. 38, 40, and 44 contain all changes from the original tariff that are

effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 10 of Supplement No. 38, page 26 of Supplement No. 40 and page 6 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 9 of Supplement No. 38, pages 19 to 21 of Supplement No. 40 and page 5 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued May 22nd, 1916. *Effective July 2nd, 1916*; except as noted in item 20b where reference is made to note A; in items 2145d, 3019c and 3022½a, and pages 16 and 35; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24100.

(Stamped:) Received; Interstate Commerce Commission; 32466; May 23 1916; Division of Tariffs.

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## COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536i cans 1536h	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .</p> <p>NOTE A.—Rates will not apply * * * on the articles described in Items * * * 2546b, * * *, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.</p>	<p>Following points in Oklahoma * Kiefer *</p>	<p>Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13</p>
			<p>Reissue; effective June 13th, 1916, in Supplement No. 42.</p>

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## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. * *
2546c Cans 2546b	<p>OILS:</p> <p>Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues.....</p>	<p>* Okla. Kiefer"</p>	<p>Following points in Texas * Port Arthur West Port Arthur</p>	<p>33</p>

*Supplement No. 45 to I. C. C. No. 1048.* Cancels Supplement No. 44. Supplements Nos. 38, 40 and 45 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

### **SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

#### *Supplement No. 45.*

Cancels Supplement No. 44. Supplements Nos. 38, 40 and 45 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 10 of Supplement No. 38, page 26 of Supplement No. 40 and page 6 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 9 of Supplement No. 38, pages 19 to 21 of Supplement No. 40 and page 5 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter dis-

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tances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued May 29th, 1916. *Effective July 12th, 1916*; except as noted in item 1770b where reference is made to note C; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24130.

(Stamped:) Received; Interstate Commerce Commission; 33773; May 29 1916; Division of Tariffs.

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536i cancels 1536h	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof . . . . .</p>		
		Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A.—Rates will not apply \* \* \* on the articles described in Items \* \* \* 2546b, \* \* \*, or reissues thereof, from and to the points specified in said items, nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff as amended.

Reissue; effective June 13th, 1916, in Supplement No. 42.

Page 32.

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, ***	FROM	TO	Rates in Cents per 100 lbs.
OILS:				
2546c	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues.....	• Kiefer Okla. •	Following points in Texas • Port Arthur • West Port Arthur	33
Reissue; effective July 2, 1916, in Supplement No. 44.				

*Supplement No. 46 to I. C. C. No. 1948.* Cancels Supplement No. 45. Supplements Nos. 38, 40 and 46 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 46.*

Cancels Supplement No. 45. Supplements Nos. 38, 40 and 46 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 10 of Supplement No. 38, page 26 of Supplement No. 40 and page 6 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, page 9 of Supplement No. 38, pages 19 to 21 of Supplement No. 40 and page 5 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued June 8th, 1916. *Effective July 20, 1916*; except as noted in individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24152.

(Stamped: ) Received; Interstate Commerce Commission; 36004; Jun 10 1916; Division of Tariffs.

Page 21.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*

Item No.	COMMODITIES Carloads, * * *	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536l cancels 1536h	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Cir-	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

cular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Items \* \* \* 2546b, \* \* \*, or reissues thereof, from to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of Tariff, as amended.

Reissue; effective June 13th, 1916, in Supplement No. 42.

Page 32.

#### COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. •
<b>OILS:</b>				
2546c	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No.	• Kiefer, Okla.	Following points in Texas; •	
2546b	1-G (F. A. Leland's I. C. C. No. 1137), or reissues. ....		Port Arthur	33
	Reissue; effective July 2, 1916, in Supplement No. 44.		West Port Arthur.	

*Supplement No. 47 to I. C. C. No. 1048* Cancels Supplements Nos. 38, except those portions under suspension; and 46. Supplements Nos. 40 and 47 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

#### SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

#### *Supplement No. 47.*

Cancels Supplements Nos. 38, except those portions under suspension; and 46. Supplements Nos. 40 and 47 contain

all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting supplements Nos. 37 and 38.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 26 of Supplement No. 40 and page 12 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 19 to 21 of Supplement No. 40 and page 11 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued June 21, 1916. *Effective August 2, 1916*; except as noted on pages 3 and 11 where reference is made to (119); on page 27 where reference is made to note O; on page 34 where reference is made to note 4; in item 1896b where reference is made to note A; in item 2292b where reference is made to note A; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24153.

(Stamped:) Received; Interstate Commerce Commission; 38214; Jun 23 1916; Division of Tariffs.

Page 41.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
15361 cans 15362	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification.....</p> <p>NOTE A.—Rates will not apply * * * on the articles described in Items * * * 2546b, * * *, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of tariff as amended.</p>		<p>Following points in Oklahoma * Kiefer * Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13</p>

Reissue; effective  
June 13th, 1916, in  
Supplement No. 42.

Page 70.

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. *
2546c Cans 2546b	<p>OILS</p> <p>Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues, .....</p> <p>Reissue; effective July 2, 1916, in Supplement No. 44.</p>		<p>* Kiefer, Okla. * Following points in Texas; * Port Arthur * West Port Arthur.</p>	33

*Supplement No. 48 to I. C. C. No. 1048.* Supplements Nos. 40, 47 and 48 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 48.*

Supplements Nos. 40, 47 and 48 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 26 of Supplement No. 40 and page 12 of Supplement No. 47, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 19 to 21 of Supplement No. 40 and page 11 of Supplement No. 47.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter dis-

tances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued June 30, 1916. *Effective August 10, 1916*; except as noted on page 3 where reference is made to note P; and in items 1536j, 2490e, 2496h, 2498; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.  
Authority No. 24235.

(Stamped:) Received; Interstate Commerce Commission; 39915; Jul 1 1916; Division of Tariffs.

Page 4.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, \* \* \*.

Item No.	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
	Carloads, * * *	*	*

Effective July 16, 1916. Issued under special permission of the Interstate Commerce Commission No. 37969 of June 16, 1916.

OILS: Petroleum Oil and its Products, \* \* \* listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; \* \* \*; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof. ....

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Items

Following points in Oklahoma  
\*  
Kiefer  
\*  
Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

1536j  
can-  
cels  
1536l

2546c \* \* \* or reissues thereof from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.

*Supplement No. 49 to I. C. C. No. 1048.* Cancels Supplement No. 48. Supplements Nos. 40, 47 and 49 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

# **SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

## *Supplement No. 49.*

Cancels Supplement No. 48. Supplements Nos. 40, 47 and 49 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 43 suspends portions of Supplements Nos. 36, 37 and 38. See page 2 of Supplement No. 43 for corrections affecting Supplements Nos. 37 and 38.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 26 of Supplement No. 40, page 12 of Supplement No. 47 and page 3 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 19 to 21 of Supplement No. 40 and page 11 of Supplement No. 47 and page 3 herein.

Governed, except as otherwise provided herein, by Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued July 13, 1916. *Effective August 24, 1916*; except as noted in individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24268.

(Stamped:) Received; Interstate Commerce Commission; 42072; Jul 14 1916; Division of Tariffs.

\* \* \* \* \*

Page 5.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536j cancels 1536i	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *: in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....		Following points in Oklahoma * Kiefer * Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Items \* \* \* 2546c, \* \* \*, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.

Reissue; \* \* \* effective July 16, 1916, in Supplement No. 48.

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*Supplement No. 50 to I. C. C. 1048.* (120) Cancels rates set forth in Supplements 36 and 37 on Cement named on page 16 in note F and item 1440b, and Supplement No. 38 on Cement on page 17 in note F and item 1440c; also Supplements Nos. 43 and 49. Note—This completes the cancellation of Supplements Nos. 36, 37 and 38. Supplements Nos. 40, 47 and 50 contain all changes from the original tariff that are effective on the date hereof.

#### SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

##### *Supplement No. 50.*

(120) Cancels rates set forth in Supplements 36 and 37 on Cement named on page 16 in note F and item 1440b, and Supplement No. 38 on Cement on page 17 in note F and item 1440c; also Supplements Nos. 43 and 49. Note—This completes the cancellation of Supplements Nos. 36, 37 and 38. Supplements Nos. 40, 47 and 50 contain all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 26 of Supplement No. 40, page 12 of Supplement No. 47 and page 6 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 19 to 21 of Supplement No. 40, page 11 of Supplement No. 47 and page 5 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues

thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

**Special Notice**—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued August 2, 1916. *Effective September 15, 1916*; except as noted above where reference is made to (120); on page 18 where reference is made to note P; in item 2744; and in other individual items. For explanation of (120) see page 6.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24287.

(Stamped:) Received; Interstate Commerce Commission; 45928; Aug 4 1916; Division of Tariffs.

Page 30.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536k cans- cels 1536j	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed	Following points in Oklahoma * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 6 to 10, inclusive, and Group 13

in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof. ....

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Item 2546c, \* \* \*, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of tariff as amended.

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*Supplement No. 52 to I. C. C. No. 1048. Cancels Supplements Nos. 47; and 50, except those portions under suspension. Supplements Nos. 40 and 42 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.*

# SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

## *Supplement No. 52.*

Cancels Supplements Nos. 47; and 50, except those portions under suspension. Supplements Nos. 40 and 52 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 26 of Supplement No. 40 and page 16 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 19 to 21 of Supplement No. 40 and pages 13 and 14 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued October 6, 1916. *Effective November 16, 1916*; except as noted on page 40 where reference is made to note P; in item 2468b; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24435.

(Stamped:) Received: Interstate Commerce Commission; 57675; Oct 7 1916; Division of Tariffs.

Page 58.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \* \*

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536l cancels 1536k	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines'	Following points in Oklahoma * Cushing * Jenks * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13

Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof. ....

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Items 2546c \* \* \*, or reissues thereof, from and to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of tariff as amended.

Page 94.

COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. •
	OILS			
2546c	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern	•	Following	
Can-	Lines' Classification Exceptions and Rules-Circular No.	Kiefer, Okla.	points in	
cels	1-G (F. A. Leland's I. C. C. No.	•	Texas;	
2546b	1137) or reissues.....		•	
			Port Arthur	33
			•	
			West Port	
			Arthur	
	Reissue; effective July 2,			
	1916, in Supplement No. 44.			

*Supplement No. 53 to I. C. C. No. 1048.* Supplements Nos. 40, 52 and 53 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 53.*

Supplements Nos. 40, 52 and 53 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

Local, joint and proportional tariff, applying on classes

and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 26 of Supplement No. 40, page 16 of Supplement No. 52 and page 5 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 19 to 21 of Supplement No. 40, pages 13 and 14 of Supplement No. 52 and page 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued October 20, 1916. *Effective December 2, 1916*; except as noted on page 2 where reference is made to (124); on pages 6 and 7; in items 1488; 1536m, 2486a, 2496k, 3019f and 3022½d; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24574.

(Stamped:) Received; Interstate Commerce Commission; 59859; Oct 21 1916; Division of Tariffs.

• • • • •

Page 2.

## PARTICIPATING CARRIERS

Railway Abbreviations	NAMES OF CARRIERS * * *	Under Powers of Attorney to F. A. Leland From FX 1 No.
St. L. & S. F.	St. Louis & San Francisco R. R. Co. James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.	100

Page 10.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
No.	Carloads, * * *	*	

1536m cancels 1636L	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....	Following points in Oklahoma * Cushing * Jenks * Kiefer *	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
---------------------------	---	--	---

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

NOTE A.—Rates will not apply \* \* \* on the articles described in Items \* \* \* 2546c \* \* \*, or reissues thereof, from and to the points specified in said items, nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff as amended.

Page 20.

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM * * *	TO * * *	Rates in Cents per 100 lbs. *
3023½	<b>OIL:</b> Unrefined Naphtha in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-J, E. B. Boyd's I. C. C. A-623), or reissues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum.	Kiefer *	Okla. " Port Arthur, Tex.	19½
			Stations on the T. & N. O. R. R., viz.: *** Elvista to Wantmore Jct. Tex (Indices 5840 to 6029, inclusive)	
* * * * *				

*Supplement No. 54 to I. C. C. No. 1048.* Cancels Supplements Nos. 40 and 53. Supplements Nos. 52 and 54 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 54.*

Cancels Supplements Nos. 40 and 53. Supplements Nos. 52 and 54 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 16 of Supplement No. 52 and page 24 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 13 and 14 of Supplement No. 52 and pages 17 to 20 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued November 21, 1916. *Effective January 2, 1917*; except as noted on page 24 where reference is made to note A; on page 44 where reference is made to note P; in item 1536n where reference is made to note I; in item 2496-I where reference is made to note E; in item 3022 $\frac{1}{2}$ e where reference is made to note E; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24654.

(Stamped:) Received; Interstate Commerce Commission; 65553; Nov 23 1916; Division of Tariffs.

Page 3.

PARTICIPATING CARRIERS.

Railway Abbreviations	NAMES OF CARRIERS * * *	Under Powers of Attorney to F. A. Leland Form FX 1 No.
St. L-S. F.....St.	Louis-San Francisco Ry.....	100

NOTE.—Rates and routes published in this tariff, as amended, to or from stations on the St. Louis and San

Francisco R. R. will apply as being  
stations on the St. Louis-San Fran-  
cisco Ry.

St. L. S. F. & T...St. Louis, San Francisco and Texas Ry.  
Co. .... 23 Corrected ..

Pages 54 and 55.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
1536n can- cels 1536m	<p>OILS: Petroleum Oil and its Pro- ducts, * * * listed under head of "Pe- troleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Cir- cular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwest- ern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, ship- ments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .</p> <p>NOTE A.— Rates will not apply * * * on the articles described in Items * * * 2546c * * *, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.</p>	<p>Following points in Oklahoma * Cushing * Jenks * Kiefer *</p>	<p>Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13</p>

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM * * *	TO * * *	Rates in Cents per 100 lbs.
	<b>OILS:</b>		Okla.	
	Unrefined Naphtha, in tank cars, minimum weight full-	Kiefer	"	
3023½	A shell capacity of the tank (as		Port Ar-	
3023½	cancels shown in United States and		thur, Tex.	
	Canadian Railroads' Circular		*	
	No. 6-K, E. B. Boyd's I. C. C.		Stations on	19½
	A-722), or reissues, at estimat-		the T. & N. O.	
	ed weight of 6.6 pounds per		R. R., viz.:	
	gallon, unless the weight carry-		*** Elvista to	
	ing capacity of the car		Wantmore Jct.,	
	trucks is less, in which case		Tex. (Indices	
	the actual weight subject to		5840 to 6209),	
	the weight carrying capacity		inclusive.	
	of the car trucks will govern			
	as minimum.			
	* * * * *			

*Supplement No. 56 to I. C. C. No. 1048 Cancels Supplement No. 55. Supplements Nos. 52, 54 and 56 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.*

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 56.*

Cancels Supplement No. 55. Supplements Nos. 52, 54 and 56 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 16 of Supplement No. 52, and page 24 of Supplement No. 54, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 13 and 14 of Supplement No. 52 and pages 17 to 20 of Supplement No. 54.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued December 5, 1916. *Effective January 16, 1917*; except as noted on page 3 where reference is made to note R; in item 1536o where reference is made to note J; in item 2496m where reference is made to note F; in item 3019g where reference is made to note B; in item 3026e where reference is made to note A; and in other individual items.

Issued by F. A. Leland, agent, St. Louis, Mo.

Authority No. 24749.

(Stamped:) Received; Interstate Commerce Commission; 897; Dec 6 1916; Division of Tariffs.

Page 3.

GEOGRAPHICAL LIST OF OKLAHOMA POINTS FROM AND TO WHICH  
RATES APPLY.

INDEX NOS.	STATIONS ON	GROUP BASES
9193	Mid. Val. R. R. Kiefer	See Items 1536o *** 3023½a ***.

Page 5.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
No.	Carloads, * * *	*	*
1536o cancels 1536n	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .</p> <p>NOTE A.—Rates will not apply * * * on the articles described in items * * * 2546c * * * or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, as amended. Reissue; * * * effective February 1, 1916, in Supplement No. 36.</p>		
		Following points in Oklahoma	Rate of 39 cents per 100 pounds will apply to
		Cushing	Groups 5 to 10, inclusive,
		Jenks	and Group 13
		Kiefer (Mid. Val. R. R.)	
		(See Note J.)	
		Kiefer (St. L-S. F. Ry.)	

NOTE J.—Effective December 16, 1916. Issued under authority of Rule 57, Interstate Commerce Commission Tariff Circular No. 18-A, account of new station on newly constructed extension of Mid. Val. R. R., from which no rates have hitherto applied. Rates apply only on shipments transported in tank cars.

*Supplement No. 57 to I. C. C. No. 1048.* Cancels Supplement No. 56. Supplements Nos. 52, 54 and 57 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 57.*

Cancels Supplement No. 56. Supplements Nos. 52, 54 and 57 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 51 suspends portions of Supplement No. 50.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 16 of Supplement No. 52, and page 24 of Supplement No. 54 and page 5 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 13 and 14 of Supplement No. 52 and pages 17 to 20 of Supplement No. 54 and page 4 herein

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued December 20, 1916. *Effective February 1, 1917*; except as noted on page 2 where reference is made to note A;

1050 GULF REFINING COMPANY, A CORPORATION, vs.

in (129), page 5; in item 1536p; in item 2496n; pages 39, 40, 41, 43, 44 where reference is made to note H; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24775.

(Stamped:) Received; Interstate Commerce Commission; 3848; Dec 22 1916; Division of Tariffs.

Page 5.

GEOGRAPHICAL LIST OF OKLAHOMA POINTS FROM AND TO WHICH RATES APPLY.

INDEX NOS.	STATIONS ON	GROUP BASES
9193	Mid. Val. R. R. Kiefer	See Items 1536p *** 3023½a ***.

Page 48.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM *	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *
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Effective February 16, 1917.

1536p can- cels 1536o	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....	Following points in Oklahoma * Cushing * Jenks * Kiefer (Mid. Val. R. R.) (See Note 1) Kiefer (St. L.-S. F. Ry.)	Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13
--------------------------------	--	--	---

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A.—Rates will not apply \* \* \* on the articles described in items \* \* \*

2546c \* \* \*, or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive, of Tariff, as amended.

NOTE 1. Rates apply only on shipments transported in tank cars.

*Supplement No. 59 to I. C. C. No. 1048.* Cancels Supplement No. 57. Supplements Nos. 52, 54 and 59 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50.

### SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

#### *Supplement No. 59.*

Cancels Supplement No. 57. Supplements Nos. 52, 54 and 59 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 16 of Supplement No. 52, and page 24 of Supplement No. 54 and page 5 herein, and points in Texas, also Texarkana, Tex.Ark., named on pages 43 to 62, inclusive, of tariff, pages 13 and 14 of Supplement No. 52 and pages 17 to 20 of Supplement No. 54 and page 4 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.



Page 48.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13
No.	Carloads, * * *	*	Rates in Cents per 100 lbs.
1536p can- cels 1536o			
<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification.....</p> <p>NOTE A.—Rates will not apply * * * on the articles described in Items * * * 2546c, * * * or reissues thereof, from and to the points specified in said items; nor on crude and fuel petroleum oil, in straight or mixed carloads, to points named on pages 170 to 174, inclusive of tariff, as amended.</p> <p>Reissue; * * * effective Feb. 16, 1917, in Supplement No. 57.</p>		<p>Following points in Oklahoma</p> <p>Cushing</p> <p>Jenks</p> <p>Kelfer, (Mid. Val. R. R.) (See Note I) Kiefer, (St. L. S. F. Ry.)</p>	<p>Rate of 39 cents per 100 pounds will apply to Groups 5 to 10, inclusive, and Group 13</p>

(NOTE I. Rates apply only on shipments transported in tank cars.)

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. •
	OIL:		Okla.	
	Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. A-722), or reissues at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum.	Kiefer	" Port Arthur, Tex.	19½
3023½b			Stations on the T. & N. O. R. R., viz., *** Elvita to Wantmore Jet., Tex. (indices 5840 to 6029) inclusive.	
3023½a				
•	•	•	•	•

*Supplement No. 60 to I. C. C. No. 1048.* Cancels Supplements Nos. 52 and 59. Supplements Nos. 54 and 60 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50.

## SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

*Supplement No. 60.*

Cancels Supplements Nos. 52 and 59. Supplements Nos. 54 and 60 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 24 of Supplement No. 54, and page 17 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 17 and 20 of Supplement No. 54 and pages 14 and 15 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued January 20, 1917. *Effective March 3, 1917*; except as noted on page 17 where reference is made to note A; on page 54 where reference is made to note A; on page 56; on page 63 where reference is made to note A; on page 64 where reference is made to note L; on page 64 where reference is made to note 3; on page 65 where reference is made to note C; on page 65 where reference is made to note S; in item 71; in item 1536q where reference is made to note J; in item 1844a where reference is made to note A; in item 2496o where reference is made to note F; in item 2508h where reference is made to note 2; in item 30221½g where reference is made to note F; in item 3023f where reference is made to note C; in item 30231½c where reference is made to note A; in item 3024h where reference is made to note C; in item 3026f where reference is made to note A; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24859.

(Stamped:) Received; Interstate Commerce Commission; 8024; Jan 19 1917; Division of Tariffs.

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Page 3.

## PARTICIPATING CARRIERS.

Railway Abbreviations	NAMES OF CARRIERS * * *	Under Powers of Attorney to F. A. Leland Form FX 1 No.
St. L.-S. F.....	St. Louis-San Francisco Ry.....	137 ***
NOTE.—Rates and routes published in this tariff, as amended, to or from stations on the St. Louis and San Francisco R. R. will apply as being stations on the St. Louis-San Fran- cisco Ry.		
St. L. S. F. & T....	St. Louis, San Francisco and Texas Ry. Co. ....	30 ***

Page 17.

GEOGRAPHICAL LIST OF OKLAHOMA POINTS FROM AND TO WHICH  
RATES APPLY.

INDEX NOS.	STATIONS ON	GROUP BASES
9193	Mid. Val. R. R. Kiefer	See Items 1536p *** 3023 1/2a ***; 2546d

Page 81.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
1536q can- 1536p cels	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 shipments transported in tank cars will pounds, except that freight charges on be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....	Following points in Oklahoma * Cushing * Jenks * Kiefer (Mid. Val. R. R.) (See Note I) Kiefer (St. L.- S. F. Ry.) *	Rate of 39 cents per 100 pounds will apply to Groups 6 to 10, inclusive, and Group 13

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof, shipments of petroleum oil and its products

specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

NOTE A.—Rates will not apply \* \* \* on the articles described in Items \* \* \* 2546c \* \* \*, or reissues thereof, from to the points specified in said items nor on crude and fuel petroleum oil, in straight or mixed carloads to points named on pages 170 to 174, inclusive, of Tariff, as amended.

NOTE I.—Rates apply only on shipments transported in tank cars.

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### COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs.
OILS:				
1546d	Gasoline in tank cars, minimum weight as provided in Item: 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues.....	* Kiefer,	Okla. Following points in Texas * Port Arthur * West Port Arthur	33

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### COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs.
OILS:				
3023½c	Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. A-722), or reissues at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum.	Okla. Jenks (Note A) Kiefer	Port Arthur, Tex. * Stations on the T. & N. O. R. R., viz., ***Elvista to Wantmore Jct., Tex. (indices 5840 to 6029) inclusive.	19½

NOTE A.—Effective February 3, 1917. Issued under authority of Rule 77(a) of Interstate Commerce Commis-

sion Tariff Circular No. 18-A.  
The rate from the more distant point appears in Southwestern Lines' Tariff No. 26-T (F. A. Leland's I. C. C. No. 1048), Supplement No. 59 Item No. 3023½b.

*Supplement No. 63 to I. C. C. No. 1048.* Cancels Supplements Nos. 54 and 62. Supplements Nos. 60, 61 and 63 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50. Supplement No. 61 suspends portions of Supplements Nos. 57, 59 and 60.

# SOUTHWESTERN LINES' TARIFF NO. 26-T

For individual lines' Tariff numbers, see page 2.

## *Supplement No. 63.*

Cancels Supplements Nos. 54 and 62. Supplements Nos. 60, 61 and 63 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50. Supplement No. 61 suspends portions of Supplements Nos. 57, 59 and 60.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive of tariff, page 17 of Supplement No. 60, and page 25 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 14 and 15 of Supplement No. 60, and pages 18 to 21 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued February 21, 1917. *Effective April 2, 1917*; except as noted in individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24991.

(Stamped:) Received; Interstate Commerce Commission; 13557; Feb 21 1917; Division of Tariffs.

\* \* \* \* \*

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# COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM * * *	TO	Rates in Cents per 100 lbs. *
	OIL:		Okla.	
3023½d can- cels 3023½c	Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. A-722), or reissues at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum.	Jenks. . . ." Kiefer. . . ."	Port Arthur, Tex. * Stations on the T. & N. O. R. R., viz., 19½ ***Elvsta to Wantmore Jct., Tex. (indices 5840 to 6029) inclusive.	

Supplement No. 64 to I. C. C. No. 1048. Supplements Nos. 60, 61, 63 and 64 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50. Supplement No. 61 suspends portions of Supplements Nos. 57, 59 and 60.

**SOUTHWESTERN LINES' TARIFF NO. 26-T**

For individual lines' Tariff numbers, see page 2.

*Supplement No. 64.*

Supplements Nos. 60, 61, 63 and 64 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 58 suspends portions of Supplement No. 50. Supplement No. 61 suspends portions of Supplements Nos. 57, 59 and 60.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 76 to 82, inclusive, of tariff, page 17 of Supplement No. 60, page 25 of Supplement No. 63, and page 5 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 43 to 62, inclusive, of tariff, pages 14 and 15 of Supplement No. 60, pages 18 to 21 of Supplement No. 63 and page 5 herein.

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No 12, or reissues thereof; and Southwestern Lines' Classification exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

Special Notice—The rates named in this Tariff are subject to the conditions of the Carriers' Bill of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Order (or Orders), as indicated in individual items herein.

Issued March 22, 1917. *Effective May 2, 1917.* (Except as noted in items 1966a, 2496p, 2874i and 2876f.)

Issued by F. A. Leland, Agent, St. Louis, Mo.  
 Authority No. 25058.

(Stamped:) Received; Interstate Commerce Commission; 18992; Mar 23 1917; Division of Tariffs.

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# EXPLANATION OF CHARACTERS.

Characters:

Explanation.

(136)

For rates, rules and regulations on Petroleum and Petroleum Products, Asphalt and Asphalt Rock, from Oklahoma Producing Points, see Southwestern Lines' Tariff No. 79 (F. A. Leland's I. C. C. No. 1136.)

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## COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES Carloads, * * *	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
1536r cancels 1536q	OILS: Petroleum and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137), or reissues thereof.....	Points in Oklahoma	Cancel see (136).

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## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. *
2546e Cancels 2546d	OIL: Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-G (F. A. Leland's I. C. C. No. 1137) or reissues.....	* Okla. Kiefer, " *	Following points in Texas: * Port Arthur.. * West Port Arthur *	Cancel. (See (136).

For explanation of Characters, see \* \* \* pages \* \* \* 7 herein.

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates
	<b>OIL</b>			
3023½e	Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. A-722), or reissues at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum.	Points in Oklahoma	Points in Tex... ***	Cancel see (136)
3023½d				
*	*	*	*	*
For explanation of Characters, see pages * * * 6 and 7 herein.				
*	*	*	*	*

**Government's Exhibit 37.**

Only three supplements to this classification will be in effect at any time.

C. R. C. No. 10 (Cancels C. R. C. No. 9 and Supplements).  
I. C. C. No. 12 (Cancels I. C. C. No. 11 and Supplements).  
P. S. C. Mo. No. 3 (Cancels P. S. C. Mo. No. 2 and Supplements); P. U. C. Colo. No. 3 (Cancels P. U. C. Colo. No. 2 and Supplements); P. S. C. Wyoming No. 2 (Cancels P. S. C. Wyoming No. 1 and Supplements); P. U. C. Idaho No. 2 (Cancels P. U. C. Idaho No. 1 and Supplements); Illinois P. U. C. No. 1—Corporation Commission Oklahoma No. 1.

**THE WESTERN CLASSIFICATION NO. 54.**

(Cancels the Western Classification No. 53 and Supplements.)

Applying on Freight Traffic covered by Tariffs issued subject thereto.

Issued July 15, 1916—*Effective September 1, 1916.*

Issued and filed with the Interstate Commerce Commission by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Board of Railway Commissioners for Canada by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Public Service Commission of Missouri by R. C. Fyfe, as Agent for Missouri lines.

Issued and filed with the Public Utilities Commission of Colorado by R. C. Fyfe, as Agent for Colorado lines.

Issued and filed with the Public Service Commission of Wyoming by R. C. Fyfe, as Agent for Wyoming lines.

Issued and filed with the Public Utilities Commission of Idaho by R. C. Fyfe, as Agent for Idaho lines.

Issued and filed with the Illinois Public Utilities Commission by R. C. Fyfe, as Agent for Illinois lines.

Issued and filed with the Corporation Commission of Oklahoma by R. C. Fyfe, as Agent for Oklahoma lines.

The Western Classification Committee. Transportation Building, Chicago, R. C. Fyfe, Chairman. Copyright, 1916, by R. C. Fyfe, Chairman.

(Stamped:) Received; Interstate Commerce Commission; 40799; Jul 7 1916; Division of Tariffs. Cancelled by-I. C. C. No. 13; Effective 4-1-18.

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# TABLE OF CONTENTS OF THE WESTERN CLASSIFICATION NO. 54, I. C. C. No. 12.

Subject	Page No.
Index to Rules . . . . .	xii to xiv
Index to Articles . . . . .	xv to c
Rules and Conditions . . . . .	1 to 96

*Pages i, iv, v, & vii.*

This Classification is filed with the Interstate Commerce Commission by R. C. Fyfe, Chicago, Ill., as agent for the following lines:

Atehison, Topeka & Santa Fe Ry. . . . . FX1 No. 63,

Gulf, Colorado & Santa Fe Ry. . . . . FX1 No. 40,

Houston & Texas Central R. R. . . . . FX1 No. 23

Kansas City Southern Ry. ....	FX1 No. 34
•	•
Midland Valley R. R. ....	FX1 No. 26
•	•
St. Louis & San Francisco R. R. (James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers). ....	FX1 No. 95
•	•
Texarkana & Ft. Smith Ry. ....	FX1 No. 28
•	•
Texas & New Orleans R. R. ....	FX1 No. 22.
•	•

*Pages xii, xiii, and xiv*

### INDEX TO RULES.

	Rule No.	Page No.
•	•	•
Commodities in Tank Cars. ....	32	15
•	•	•
Dangerous Articles other than explosives. ....	44	48
•	•	•
Inflammable articles . ....	44	48
•	•	•
Transportation of Dangerous Articles other than explosives . ....	44	48

*Pages 1 and 15*

### RULES AND CONDITIONS OF THE WESTERN CLASSIFICATION.

•   •   •   •   •   •   •   •

#### RULE 32.

•

SECTION 4. When shipments of inflammable liquids subject to Section 1825, Rule 44, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank to cover the difference between the dome capacity and the two (2) per cent outage.

Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.

•   •   •   •   •   •   •   •

## RULE 44.

*Interstate Commerce Commission*

## REGULATIONS

for the

*Transportation of Dangerous Articles Other Than  
Explosives by Freight.*

Prescribed under the act of March 4, 1909, and section 15 of the act to regulate commerce, as amended June 18, 1910. Revision formulated and published July 2, 1914, effective October 1, 1914, and superseding regulations published January 1, 1912.

## GENERAL NOTICE.

1701. Special precautions are necessary in preparing for shipment packages of dangerous articles other than explosives, and in handling these packages during transit. Any failure of a shipper, or of a carrier, to perform the duties imposed upon him in this respect may be the actual or a contributory cause not only of destructive fires but of disastrous explosions, since large quantities of explosives are transported frequently through thickly populated districts and in trains containing cars loaded with other dangerous articles.

1702. Sections 235 and 236 of the act of March 4, 1909, require the shipper of dangerous articles to describe and mark his packages properly and to inform the agent of the carrier of the true character of their contents. Heavy penalties are provided for the shipper who, knowingly, solicits the transportation of dangerous articles without complying with these requirements, as well as for the carrier that knowingly transports them.

1703. To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation by land in interstate commerce of dangerous articles other than explosives, the following regulations are prescribed to define these articles for freight transportation purposes, to state the precautions that must be observed by the shipper in preparing them for shipment, and by the carrier in handling them while in transit. It is the duty of each such carrier and shipper to make the prescribed regulations effective and to thoroughly instruct their employees in relation thereto.

1704. These regulations apply to all shipments of dangerous articles other than explosives, including carriers' material and supplies.

1705. Specifications as to containers, methods of packing for shipment, etc., will be considered and prescribed from time to time. Orders prescribing such specifications will be given effective dates as conditions and investigations may appear to warrant.

1706. The Bureau for the Safe Transportation of Explosives and other Dangerous Articles, hereinafter called Bureau of Explosives, organized by the railways under the auspices of the American Railway Association, is an efficient bureau in charge of an expert chief inspector. This bureau will make inspections and conduct investigations and will confer with manufacturers and shippers with a view to determining what specifications and regulations will within reasonable limits afford the highest degree of safety in packing and preparing these dangerous articles for shipment and in transporting the same. The Commission will seek to avail itself of the expert knowledge thus developed and, in formulating amendments to these regulations or specifications supplemental thereto, while not bound thereby, will give due weight to such expert opinions.

#### GENERAL RULES.

1711. Carriers that are subject to the act to regulate commerce must not receive shipments of articles defined as dangerous by these regulations when the shipments are not packed, marked, labeled, described, and certified as prescribed herein. The method of manufacture and packing of articles defined as dangerous by these regulations, so far as it affects safe transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives.

1712. All shipments of articles subject to these regulations offered for transportation in interstate commerce must be properly described by the shipper in his shipping order and bill of lading under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

The same description of contents must be marked plainly on the outside of each package.

In less-than-carload shipments each package must be marked also to show plainly the name and address of the consignee. This address, the name of contents, and the required label or "no label required" marking, should be as near together as practicable.

1713. All shipments of articles defined as dangerous by these regulations, and for which detailed instructions for pack-

ing are not given herein, must be securely packed in containers strong enough to stand without rupture or leakage of contents all ordinary shocks incident to reasonably careful handling during transit. It is the duty of shippers, where leakage from their shipping containers is known to be a probable source of fire or material damage to other freight, to exercise special care in constructing shipping containers for such articles, even though their names do not appear in the list of dangerous articles, paragraph 1807.

1714. Carriers must forward shipments of dangerous articles other than explosives promptly and within 48 hours after acceptance at originating point or receipt at transfer station or at interchange point, and consignees must remove such shipments from the carriers' property within 48 hours after notice of arrival at destination, Sundays and holidays not included.

1715. (a) *Serious violations of these regulations*, such as the discovery of leaking or broken packages of dangerous articles, and *accidents or fires* in connection with the transportation or storage on carrier's property of dangerous articles, must be reported by the carrier to the chief inspector of the Bureau of Explosives, 30 Vessey Street, New York City.

(b) Consignees should report promptly to the chief inspector, Bureau of Explosives, all instances of broken or defective containers in shipments of dangerous articles received by them.

#### SECTION I. INFORMATION AND DEFINITIONS.

1800. For transportation purposes dangerous articles other than explosives are divided into the following groups:

1. *Forbidden articles.*
2. *Acceptable articles.*

##### GROUP 1.—FORBIDDEN ARTICLES.

1801. The following are *forbidden articles*:

(a) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(b) Cylinders containing gases capable of combining chemically.

(c) Packages containing dangerous articles in a leaking condition or in such an insecure condition as to make leakage probable during transit.

(d) Rags or cotton waste oily with more than 5 per cent of vegetable or animal oil, or wet rags.

(e) Charcoal screenings from wet charcoal, or wet screenings, or screenings that have been wet. (See par. 1833 (c).)

(f) Dangerous articles not properly packed, marked, labeled, described, and certified.

(g) Iron sponge and spent oxide that has not been properly oxidized during manufacture.

## GROUP 2.—ACCEPTABLE ARTICLES.

### Definitions

#### *Inflammable Liquids—Red Label.*

1802. This group includes any liquid or liquid mixture that gives off inflammable vapors (as determined by flash point from Tagliabue's open cup tester, as used for test of burning oils) at or below a temperature of 80° F.

#### *Inflammable Solids—Yellow Label.*

1803. This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

#### *Oxidizing Materials—Yellow Label.*

1804. This group includes all substances, such as chlorates, permanganates, peroxides, and nitrates, that yield oxygen readily to stimulate the combustion of organic matter.

#### *Corrosive Liquids—White Label.*

1805. This group includes the strong mineral acids (in strength greater than one-half concentrated, i. e., 47 per cent sulphuric, 34 per cent nitric, 20 per cent hydrochloric) and other strongly corrosive liquids that are liable to cause fires when mixed with chemicals or with organic matter, or are liable, in case of leakage from their shipping containers, to damage other freight materially.

#### *Compressed Gases—Red or Green (Gas) Label.*

1806. This group includes all inflammable or non-inflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding  $\frac{7}{8}$  inch outside diameter and of not more than 4 fluid ounces water capacity.

### LIST OF PRINCIPAL DANGEROUS ARTICLES.

1807. (a) The following list shows the names of well-known articles in general use, other than explosives, that are

dangerous; the kind of label required on outside packages; the quantities that may be shipped in one outside package without a label when certified and marked "No label required," and the label exemptions on account of specified packing. (See column 5 of list.)

(b) When a shipment described under a name not in the following list is defined as a dangerous one by paragraphs 1802 to 1806, inclusive, the shipper must inform the carrier of the fact by use of the proper label prescribed herein, and the shipping order must show the certificate prescribed by paragraph 1867. The maximum quantity of any such article shipped in one outside package, without label, when certified and marked "No label required," except as specified herein, must not exceed the limit prescribed by column 3 of the list for dangerous articles of similar flash point or characteristic.

(c) Inflammable liquids as defined by paragraph 1802, in securely closed glass, earthenware, or metal containers of not exceeding one pint capacity each, when flash point is  $20^{\circ}$  F., or lower, and of not exceeding one quart capacity when flash point is above  $20^{\circ}$  F., packed and cushioned in fiberboard or corrugated strawboard containers, wooden boxes, kegs, or barrels, complying with shipping container specifications that apply, may be shipped without labels when certified and marked "No label required."

(d) A shipment described under a definite and proper name not in the following list and on a shipping order with no notation as to labels applied and no shipper's certificate, will be assumed by the carrier in the absence of knowledge to the contrary, to be not dangerous under these regulations.

(e) When articles described under names in the following list marked (\*) are not dangerous under the regulations, the shipper must, unless otherwise provided in said list, state on his shipping order, as a part of the description of such article "No label required," and must also furnish the certificate prescribed by paragraph 1867 and mark the package "No label required."

(f) When several dangerous articles are placed in one outside package without violating these regulations, labels must be applied, when the combined quantity of the articles of any one group exceeds the lowest limit prescribed by column 3 for any of the articles of that group that are included.

(g) When dangerous articles requiring the red label are shipped in the same outside package with dangerous articles requiring yellow or white labels, the outside package must be labeled with the red label only

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

Names of dangerous articles.	Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	2	3	4	5
1					
*Acetate, amly.....	Inf. L.....	70-80	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Acetate, ethyl.....	do .....	40	do .....	do .....	Do.
Acetate, methyl.....	do .....	40	do .....	do .....	Do.
Acetone (ethyl methyl ketone).	do .....	35	do .....	do .....	Do.
*Acid, hydrochloric (muriatic).	Cor. L.....	.....	5 pints (6 pounds)...	White.....	Para. 1805, 1851, 1852 and 1856.
Acid, hydrofluoric.....	do .....	.....	do .....	do .....	Para. 1851, 1852 and 1854.
Acid, nitric (mixed acid) ..	do .....	.....	No exemption.....	do .....	Mixed nitric and sulphuric acids, par. 1858.
*Acid, nitric.....	do .....	.....	do .....	do .....	Para. 1805, 1851, 1852 and 1857.
*Acid, sulphuric.....	do .....	.....	5 pints (9 pounds)...	do .....	Para. 1805, 1851, 1852 and 1855.
Alcohol.....	Inf. L.....	57-65	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Alcohol, denatured.....	do .....	40-60	do .....	do .....	Do.
Alcohol, wood.....	do .....	45	do .....	do .....	Do.
Ammonium perchlorate.....	Oxi. M.....	.....	25 pounds.....	Yellow.....	Para. 1822 and 1841.
Barium, chlorate of.....	do .....	.....	do .....	do .....	Do.
Barium, nitrate of, in bags...	do .....	.....	100 pounds (in one shipment).	do .....	Para. 1822 and 1841. (See Nitrates.)
Barium peroxide (binonide, dioxide).	do .....	.....	25 pounds.....	do .....	Para. 1822 and 1841.

References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.

Benzol (benzene).....	Inf. L.....	20	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Benzine.....	do.....	†0	do.....	do.....	Do.
Bronzing liquid.....	Cor. L.....		5 pints.....	White.....	Par. 1853.
Burnt cotton.....	Inf. L.....	0-70	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Calcium phosphide.....	Inf. S.....		No exemption.....	Yellow.....	Par. 1837.
Carbon bisulphide.....	do.....		do.....	do.....	Par. 1835.
Celluloid scrap.....	Inf. L.....	†0	5 pounds.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Cement, leather.....	Inf. S.....	†0	No exemption.....	Yellow.....	Par. 1839.
*Cement, liquid, n. o. s.....	Inf. L.....	0-80	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Cement, roofing (liquid).....	do.....	0-80	do.....	do.....	Do.
Cement, rubber.....	do.....	†0	do.....	do.....	Do.
Charcoal, wood, ground or pulverized.....	Inf. S.....		100 pounds.....	Yellow.....	(Par. 1833. Charcoal "in bottles," "in boxes," "in barrels," or "in tablets," "case-hardening charcoal," "animal charcoal," or "bone charcoal" is exempt from label and certificate requirements, when so described. Lump charcoal made by old kiln or pit method which provides long air exposure before shipment is exempt from label and placard requirements when certified and marked "No label required" or "No placard required." Pat. 1833.
*Charcoal, wood, lump.....	do.....		2,000 pounds.....	do.....	Pat. 1833.
Charcoal, wood, screenings.....	do.....		No exemption.....	do.....	Pars. 1822 and 1841.
Chlorates, n. o. s.....	Oxi. M.....		25 pounds.....	do.....	
Chloride of phosphorus.....	Cor. L.....		(in one shipment)	White.....	Par. 1855.
Chloride of sulphur.....	do.....		No exemption.....	do.....	Do.
Chloride of sulphur, liquid.....	do.....		do.....	do.....	Pars. 1822, 1851, 1852 and 1855.
*Cleaning fluid (or liquid).....	Inf. L.....	0-80	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Coal-tar light oil.....	do.....	0-80	do.....	do.....	Do.
*Coal-tar naphtha.....	do.....	0-80	do.....	do.....	Do.
Collodion.....	do.....	†0	do.....	do.....	Do.
Cologne spirits (alcohol).....	do.....	60	do.....	do.....	Do.
Columbian spirits (alcohol, wood).....	do.....	45	do.....	do.....	Do.

†At or below.

\*See paragraph 1807 (e).

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

1	2	3	4	5
Names of dangerous articles.	Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limits prescribed for "No label required."	
*Compounds, paint or varnish removing, liquid.	Inf. L. ....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Compounds, polishing liquid.	do .....	do .....	do .....	Do.
*Compounds, type cleansing, liquid.	do .....	do .....	do .....	Do.
*Compounds, vulcanizing.	do .....	do .....	do .....	Do.
*Compounds, vulcanizing.	Cor. L. ....	do .....	White.....	Pars. 1822, 1851, 1852 and 1855.
*Distillate .....	Inf. L. ....	do .....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Dressing, leather.....	do .....	do .....	do .....	Do.
*Driers, paint or japan.....	do .....	do .....	do .....	Do.
*Eradicators, paint or grease, liquid.	do .....	do .....	do .....	Do.
*Ether .....	do .....	5 pounds.....	do .....	Do.
*Extracts, liquid (flavoring) ..	do .....	1 gallon.....	do .....	Pars. 1807 (c), 1822, 1824 to 1827. Bark, Tanner's, medicinal and wood extracts, are exempt from label and certificate requirements when properly so described.
Gases, compressed:	Comp. G. ....	No exemption.....	Red (gas) ..	Pars. 1861 to 1863.
Acetylene (see Note 1) .....	do .....	do .....	Green (gas)	Pars. 1861 and 1862.
Air, compressed .....	do .....	do .....	do .....	Do.
Anhydrous ammonia.....	do .....	do .....	do .....	Do.

References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.

Blaugas.....	do	.....	.....	do	.....	Red (gas) ..	Pars. 1861 to 1863.
Carbonic acid.....	do	.....	.....	do	.....	Green (gas) ..	Pars. 1861 and 1862.
Chlorine.....	do	.....	.....	do	.....	do .....	Do.
Coal gas.....	do	.....	.....	do	.....	Red (gas) ..	Do.
Dental.....	do	.....	.....	do	.....	Green (gas) ..	Do.
Hydrogen.....	do	.....	.....	do	.....	Red (gas) ..	Pars. 1861 to 1863.
Liquefied petroleum gas.....	do	.....	.....	do	.....	Green (gas) ..	Pars. 1824 and 1861 to 1863.
Oxygen.....	do	.....	.....	do	.....	do .....	Pars. 1861 and 1862.
Plintsch.....	do	.....	.....	do	.....	Green (gas) ..	Pars. 1861 to 1863.
Sulphur dioxide.....	do	.....	.....	do	.....	Red or	Pars. 1861 to 1863.
Compressed gases, n. o. s.....	do	.....	.....	do	.....	green (gas)	Pars. 1861 to 1863.
Gas drips (hydrocarbon).....	Inf. L.....	†0	.....	1 gallon.....	.....	Red.....	Pars. 1867 (c), 1822, 1824 to 1827.
Gasoline (see Note 1).....	do	†0	.....	do .....	.....	do .....	Pars. 1867 (c), 1822, 1824 to 1827.
Gasoline	made by compressing natural gas or by blending liquefied petroleum gas with refinery gasoline or naphtha may be described and shipped as gasoline, provided the vapor pressure does not exceed 10 pounds per square inch.						
High wines (alcohol).....	do	60-80	.....	do	.....	do .....	Pars. 1807 (c), 1822, 1824 to 1827.
*Insecticide (vermin exterminator, liquid.....	do	0-80	.....	1 gallon.....	.....	do .....	Do.
Lacquer.....	do	0-80	.....	do	.....	do .....	Pars. 1807 (c), 1822, 1824 to 1827.
Lead, nitrate of, in bags.....	Oxi. M.....	.....	.....	100 pounds.....	.....	Yellow.....	Pars. 1822 and 1841. (See Nitrates.)
Liquefied petroleum gas.....	Inf. L.....	†0	.....	(in one shipment)	.....	.....	Pars. 1807 (c), 1822, 1824 to 1827. (See Paint.)
Matches "Strike Anywhere".....	Inf. S.....	.....	.....	No exemption.....	.....	Red.....	Pars. 1822 and 1836.
Naphtha.....	Inf. L.....	†0	.....	do .....	.....	Yellow.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Naphtha distillate.....	do	0-80	.....	1 gallon.....	.....	Red.....	Pars. 1822 and 1836.
Nitrates, in bags.....	Oxi. M.....	.....	.....	do .....	.....	do .....	Pars. 1807 (c), 1822, 1824 to 1827.
		.....	.....	100 pounds.....	.....	Yellow.....	Do.
		.....	.....	(in one shipment)	.....	.....	Pars. 1822 and 1841 Nitrates in boxes, kegs or barrels are exempt from label and certificate requirements when properly so described.

\*See paragraph 1807 (e).

†At or below.

NOTE 1.—Automobiles and motor cycles equipped with securely closed acetylene gas cylinders or tanks containing gasoline are exempt from label and certificate requirements.

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

Names of dangerous articles.	Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxl. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limits prescribed for "No label required."	References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
1	2	3	4	5
Nitrocellulose, wet with solvent.	Inf. L.....	No exemption.....	Red.....	Must contain not less than 30 per cent by weight of a solvent whose flash point is not lower than 40° F. and must be packed in glass bottles (par. 1824) or in securely closed metal vessels that will stand the drop tests prescribed for metal barrels. (Specification No. 5.) Par. 1834. Dry nitrocellulose and dry nitro-starch are high explosives. Pars. 1807 (c), 1822, 1824 to 1827. Do.
Nitrocellulose or nitro-starch, wet with 20 per cent water •Oil, gas..... •Oil described as "Oil," or "Oil, n. o. s.," or "Petroleum oil," or "Petroleum oil, n. o. s." Paint aluminum, bronzing or gold. •Paint, liquid.....	Inf. S.....  Inf. L..... do .....  do ..... do ..... do .....	do ..... 1 gallon..... do .....  do ..... do .....	Yellow.....  Red..... do .....  do ..... do .....	See Paint.  Pars. 1807 (c), 1822, 1824 to 1827. Inflammable paint, varnish, wood filler, or wood stain, liquid, in class or earthenware vessels, or in metal cans, all packed in wooden barrels or



## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

1 Name of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.— Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	5 References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
Shellac, varnish..... Soda, chloride of..... Soda, nitrate of, in bags.....	Inf. L..... Oxi. M..... do .....	1 gallon..... 25 pounds..... 100 pounds.....	Red..... Yellow..... do .....	See Paint. Pars. 1822 and 1841. Pars. 1822 and 1841. (See Nitrates.)
Soda nitrite of..... Sodium, metallic..... Sodium, peroxide..... Sodium sulphide (fused and ground).....	do .....	(in one shipment) 25 pounds..... No exemption..... do .....	do .....	Pars. 1822 and 1841. Par. 1831. Pars. 1822 and 1841. Par. 1835.
Strontia, nitrate of, in bags..	Oxi. M.....	100 pounds.....	do .....	Pars. 1822 and 1841. (See Nitrates)
Sulphur, chloride of..... Tin, bichloride, liquid (tetrachloride of).....	Cor. L..... do .....	(in one shipment) No exemption..... do .....	White.....	Pars. 1822, 1851, 1852 and 1855. Par. 1855.
Toluol (toluene)..... Trinitrotoluol, wet with 10 per cent water.....	Inf. L..... Inf. S.....	1 gallon..... No exemption.....	Red..... Yellow.....	Pars. 1807 (c), 1822, 1824 to 1827. Par. 1834.
*Varnish..... Zinc flue dust.....	Inf. L..... Inf. S.....	1 gallon..... 10 pounds.....	Red..... Yellow.....	See Paint. Par. 1830.

At or below.

\*See paragraph 1807 (e).

## SECTION II. RULES FOR PACKING.

1821. Dangerous articles for which the yellow and white labels, respectively, are prescribed must not be packed in the same package, unless the bottle containing the corrosive liquid is cushioned by incombustible absorbent material in tightly closed metal containers, as prescribed by paragraph 1851. Cylinders of compressed gases must not be packed with other articles.

1822. (a) The construction of barrels, drums, boxes, cans, carboys, or other containers purchased subsequent to March 31, 1912, and used in shipping dangerous articles other than explosives must conform to specifications approved by the Interstate Commerce Commission that apply; and each container must be stamped, labeled or marked "Complies with I. C. C. Spec'n No. —," or equivalent marking as stated in the specification.

(b) In addition to standing the tests prescribed, the design and construction of packages must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under the ordinary conditions incident to transportation. The results of experience, gained by an examination of damaged or broken packages on arrival at destination, must be reported to and recorded by the Bureau of Explosives, to the end that further use of any particular kind of package shown by experience to be inefficient may be prohibited by the Commission.

(c) Pending approval and promulgation by the Commission of specifications for types of shipping containers other than those for which specifications are published herein, containers may be used which after investigation made by the Bureau of Explosives, or by other competent testing laboratory in the presence of a representative of the Bureau of Explosives, are shown to possess the general efficiency and the protection against leakage of contents afforded by the standard types of corresponding capacity described in the specifications published herein, provided they are labeled or marked to show compliance with this requirement.

(d) Tank cars used for the shipment of dangerous articles other than explosives must comply with Master Car Builders' rules, and a tank car that leaks or one that has any defect which would make leakage during transit probable or that has not been tested and stenciled in compliance with Master Car Builders' rules must not be used for the shipment of any inflammable liquid.

(e) The tanks and their fittings must be examined by the

shipper to see that they are in proper condition for loading. Tanks must be examined for evidence of previous leaks; safety and outlet valves, dome covers and outlet-valve caps must be in proper condition before loading; after loading, tanks must not show any dropping of liquid contents at the seams or rivets, and should such dropping appear cars must be properly repaired; outlet valves must not permit more than a dropping of the liquid with valve caps off, otherwise valve must be reground and repaired. Dome covers and valve caps provided with suitable gaskets, must be properly screwed in place before cars are tendered to the carrier.

(f) Loaded tank cars tendered for shipment must be inspected by the carrier to see that they are not leaking, that the air and hand brakes, journal boxes, trucks and safety appliances are in proper condition for service, and that the car has been tested within limits prescribed by Master Car Builders' rules.

(g) Tests of all tank cars and their safety valves, as made in compliance with Master Car Builders' rules, must be certified by the party making the tests to the owner of the tank car and to the chief inspector, Bureau of Explosives; and this certification must show the initials and number of the tank car, the service for which it is suitable, the date of test, place of test, and by whom made.

#### INFLAMMABLE LIQUIDS—RED LABEL.

1824. (a) All inflammable liquids must be shipped in packages complying with specifications that apply as follows:

(b) In tightly closed metal cans of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11.

(c) In well-stoppered glass or earthenware vessels of not exceeding 1 gallon capacity, cushioned in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11, or in a well-stoppered glass or earthenware vessel of not exceeding 5 gallons capacity, well cushioned in a wooden box and not more than one such vessel in the box. The completed package must comply with swing and drop tests prescribed for boxed carboys by Specification No. 1.

(d) In well-stoppered glass, earthenware or metal vessels of not exceeding 1 pint capacity when flash point is 20° F., or lower, and 1 quart capacity when flash point is above 20° F., cushioned in fiber board or corrugated strawboard containers complying with Specification No. 24.

(e) In wooden kits of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2, or cushioned in wooden barrels or kegs complying with Specification No. 11.

(f) In metal-jacketed cans of not exceeding 10 gallons capacity, complying with Specification No. 23.

(g) In well-stoppered carboys of not exceeding 13 gallons capacity, cushioned in wooden boxes complying with Specification No. 1.

(h) In wooden barrels or kegs complying with Specification No. 10 when the flash point of the liquid is not lower than 20° F., or in wooden barrels or kegs complying with Specification No. 9 when the flash point is lower than 20° F., unless otherwise provided in the tariffs under which shipment moves.

(i) In metal barrels or drums complying with Specification No. 5.

(j) In tank cars complying with Master Car Builders' specifications, provided the vapor tension of the inflammable liquid corresponding to a temperature of 100° F. (90° F. Nov. 1 to Mar. 1) does not exceed 10 pounds per square inch. After May 1, 1915, a tank car must not be used for shipping inflammable liquids with flash point lower than 20° F., unless it has been tested with cold-water pressure of 60 pounds per square inch and stenciled as required by Master Car Builders' rules.

(k) Liquid condensates from natural gas or from casing-head gas of petroleum oil wells whose vapor tension at 100 degrees F. (90 degrees F. November 1st to March 1st) exceeds 10 pounds per square inch, must be described as Liquefied Petroleum Gas. In measuring the vapor tension the container of the sample may be vented momentarily at a temperature of 70 degrees F. This product must be shipped in metal drums or barrels which comply with specification No. 5 and have a nominal capacity not exceeding 55 gallons; or in special insulated tank cars approved for this service by the Master Car Builders' Association, provided the vapor tension as above defined does not exceed 15 pounds per square inch. When the vapor tension as above defined exceeds 25 pounds per square inch, cylinders as prescribed for compressed gases (see paragraphs 1861 to 1863, inclusive) must be used.

When the condensate, blended or unblended with other products, has a vapor tension as above defined, not exceeding 10 pounds per square inch, and is shipped as "gasoline" in an ordinary tank car, 60-pound test class, defined in Master Car Builders' Association Specifications for Tank Cars, the safety valves of such a car must be set to operate at 25 pounds per

square inch, with a tolerance of one pound above or below; and the mechanical arrangements for closing the dome cover of this car must either be such as to make it practically impossible to remove the dome cover while the interior of the car is subjected to pressure or suitable vents that will be opened automatically by starting the operation of removing the dome cover must be provided. The shipper must attach securely and conspicuously to the dome and to the dome cover white placards conforming to samples furnished by the Chief Inspector of the Bureau of Explosives, cautioning all railway and refinery employees not to remove the dome cover while interior pressure exists. The presence of these dome placards must be noted on the shipping order, and on the billing accompanying the car. This regulation must be made effective not later than May 15, 1916, at all points where this condensate from natural gas or "casinghead gas" is produced and shipped in a blended or unblended state; and the requirement for construction of dome covers and valve setting at 25 pounds must be made effective not later than January 1, 1917, for all tank car shipments of inflammable liquids with flash points lower than 20 degrees F.

When the "blowing" of safety valves of a car containing inflammable liquids is noted, any available means for cooling the car shell and contents, such as spraying with water, should be utilized; and, if practicable, the car should be moved to an isolated point, to minimize the fire risk. Covering the safety valves with wet cloth, wet blankets or wet gunny sacks will decrease the danger of igniting vapors escaping from a "blowing" valve. The burning of these vapors at the safety valve is not liable to cause an explosion. The valves are designed to permit, in emergencies, the burning in this way of the entire contents of the car.

(1) Carbon bisulphide in interior packages of capacity greater than  $\frac{1}{2}$  gallon must be shipped in metal cans of not less than 28 gauge, boxed, complying with Specification No. 2; or in metal barrels or drums complying with Specification No. 5, such barrels or drums after January 1, 1916, not to exceed 55 gallons capacity. Carbon bisulphide may also be shipped in tank cars complying with paragraph 1824 (j).

1825. (a) Packages containing inflammable liquids must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers, due to increase of temperature during transit. In all such packages, this vacant space must not be less than 2 per cent of the total capacity of the container. In tank cars the vacant space must not be less than 2 per cent of the total capacity of the tank,

i. e., the shell and dome capacity, combined. If the dome of tank cars does not provide this 2 per cent, sufficient vacant space must be left in the shell of the tank to make up the difference.

(b) In packages containing alcohol, cologne spirits, high wines or other distilled spirits, the vacant interior space or allowance for wantage or ullage must conform to the United States Internal Revenue Regulations.

1826. Interior packages, containing 1 quart or more of an inflammable liquid, must be packed with their filling holes up and the top of the outside package must be plainly marked "THIS SIDE UP."

1827. Wooden-jacketed cans and wooden kits must not be used for the shipment of inflammable liquids, except as inside containers as provided by Specification No. 2 or 11.

Page 302.

Item	* * * * *	C. L.
16	PETROLEUM OR PETROLEUM PRODUCTS, * * *	
	Belt Oil, Benzine, Crude Oil, Cordage Oil, Felt Oil, Floor Oil, Fuel Oil, Gas Oil, Gas, Liquefied, vapor tension at 100 degrees F., not exceeding 25 lbs. per square inch, Gasoline, Harness Oil, Leather Oil, Lubricating Oil, Miners' Oil, Miners' Oil Stock, Naphtha, Naphtha Distillate, Neatsfoot Oil, Paint Oil, Putty Oil, Refined Oil, Distillate, Refined Oil, illuminating or burning, Soap Oil, Tanners' Oil,	

Tobacco Oil,  
Transformer Oil,  
Wood Oil,  
Oil, not otherwise indexed by name, \* \*

In tank cars, C. L., weight per gallon 6.6  
lbs., \* \* \* subject to Rule 32..... 5

Supplement No. 9 to C. R. C. No. 10 (Cancels Supplements Nos. 2, 4 and 8) (Supplements Nos. 5, 6, 7 and 9 contain all changes) (Supplements Nos. 6 and 7 are suspension notices) *Supplement No. 9 to I. C. C. No. 12* (Cancels Supplements Nos. 2, 4 and 8) (Supplements Nos. 5, 6, 7 and 9 contain all changes) (Supplements Nos. 6 and 7 are suspension notices) Supplement No. 9 to P. S. C. Missouri No. 3; P. U. C. Colorado No. 3; P. S. C. Wyoming No. 2; P. U. C. Idaho No. 2; Illinois P. U. C. No. 1; C. C. Oklahoma No. 1; S. C. C. New Mexico No. 1 (Cancels Supplements Nos. 2, 4 and 8) (Supplements Nos. 5, 6, 7 and 9 contain all changes) (Supplements Nos. 6 and 7 are suspension notices).

#### THE WESTERN CLASSIFICATION NO. 54.

##### *Supplement No. 9.*

(Cancels Supplements Nos. 2, 4 and 8) (Supplements Nos. 5, 6, 7 and 9 contain all changes) (Supplements Nos. 6 and 7 are suspension notices) (Item 3, page 12, herein, issued on 30 days' notice, under special permission of the Interstate Commerce Commission, No. 40775 of February 17, 1917)

Applying on Freight Traffic covered by Tariffs issued subject thereto.

Issued and filed with the Interstate Commerce Commission by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Board of Railway Commissioners for Canada by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Public Service Commission of Missouri by R. C. Fyfe, as Agent for Missouri lines.

Issued and filed with the Public Utilities Commission of Colorado by R. C. Fyfe, as Agent for Colorado lines.

Issued and filed with the Public Service Commission of Wyoming by R. C. Fyfe, as Agent for Wyoming lines.

Issued and filed with the Public Utilities Commission of Idaho by R. C. Fyfe, as Agent for Idaho lines.

Issued and filed with the Illinois Public Utilities Commission by R. C. Fyfe, as Agent for Illinois lines.

Issued and filed with the Corporation Commission of Oklahoma by R. C. Fyfe, as Agent for Oklahoma lines.

Issued and filed with the State Corporation Commission of New Mexico by R. C. Fyfe, as Agent for New Mexico lines.

Issued March 5th, 1917—*Effective April 20th, 1917* (except as noted in individual items)

The Western Classification Committee, Transportation Building, Chicago, R. C. Fyfe, Chairman.

(Stamped:) Received: Interstate Commerce Commission; 15875; Mar 3 1917; Division of Tariffs.

\* \* \* \* \*

Page 6.

DATE  
ITEM EFFECTIVE

#### Rule 44.

1 April 20, 1917.

(Cancels Paragraph 1824 (k) of Rule 44, page 52, Classification 54.)

1824 (k) Liquid condensates from natural gas or from casinghead gas of petroleum oil wells whose vapor tension at 100 degrees F. (90 degrees F. November 1 to March 1) exceeds 10 pounds per square inch, must be described as Liquefied Petroleum Gas. In measuring the vapor tension the container of the sample may be vented momentarily at a temperature of 70 degrees F. This product must be shipped in metal drums or barrels which comply with specification No. 5 and have a nominal capacity not exceeding 55 gallons; or in special insulated tank cars approved for this service by the Master Car Builders' Association, provided the vapor tension as above defined does not exceed 15 pounds per square inch from April 1 to October 1, and 20 pounds per square inch from October 1 to April 1. When the vapor tension as above defined exceed 25 pounds per square inch, cylinders as prescribed for compressed gases (see paragraphs 1861 to 1863, inclusive) must be used.

When the condensate, blended or unblended with other products, has a vapor tension as above defined, not exceeding 10

pounds per square inch, and is shipped as "gasoline" in an ordinary tank car, 60-pound test class, defined in Master Car Builders' Association Specifications for Tank Cars, the safety valves of such a car must be set to operate at 25 pounds per square inch, with a tolerance of one pound above or below; and the mechanical arrangements for closing the dome cover of this car must either be such as to make it practically impossible to remove the dome cover while the interior of the car is subjected to pressure or suitable vents that will be opened automatically by starting the operation of removing the dome cover must be provided. The shipper must attach securely and conspicuously to the dome and to the dome cover white placards conforming to samples furnished by the Chief Inspector of the Bureau of Explosives, cautioning all railway and refinery employees not to remove the dome cover while interior pressure exists. The presence of these dome placards must be noted on the shipping order, and on the billing accompanying the car. This regulation must be made effective not later than May 15, 1916, at all points where this condensate from natural gas or "casinghead gas" is produced and shipped in a blended or unblended state; and the requirement for construction of dome covers and valve setting at 25 pounds must be made effective not later than April 1, 1917, for all tank car shipments of inflammable liquids with flash points lower than 20 degrees F.

When the "blowing" of safety valves of a car containing inflammable liquids is noted any available means for cooling the car shell and contents, such as spraying with water, should be utilized; and if practicable, the car should be moved to an isolated point, to minimize the fire risk. Covering the safety valves with wet cloth, wet blankets or wet gunny sacks will decrease the danger of igniting vapors escaping from a "blowing" valve. The burning of

these vapors at the safety valve is not liable to cause an explosion. The valves are designed to permit, in emergencies, the burning in this way of the entire contents of the car.

Supplement No. 10 to C. R. C. No. 10 (Cancels Supplements Nos. 3, 6 and 9) (Supplements Nos. 5, 7 and 10 contain all changes) (Supplement No. 7 is a suspension notice) *Supplement No. 10 to I. C. C. No. 12* (Cancels Supplements Nos. 3, 6 and 9) (Supplements Nos. 5, 7 and 10 contain all changes) (Supplement No. 7 is a suspension notice) Supplement No. 10 to P. S. C. Missouri No. 3; P. U. C. Colorado No. 3; P. S. C. Wyoming No. 2; P. U. C. Idaho No. 2; Illinois P. U. C. No. 1; C. C. Oklahoma No. 1; S. C. C. New Mexico No. 1 (Cancels Supplements Nos. 3, 6 and 9) (Supplements Nos. 5, 7 and 10 contain all changes) (Supplement No. 7 is a suspension notice)

#### THE WESTERN CLASSIFICATION NO. 54.

##### *Supplement No. 10.*

(Cancels Supplements Nos. 3, 6 and 9) (Supplements Nos. 5, 7 and 10 contain all changes) (Supplement No. 7 is a suspension notice) (Item 9, page 24 herein, issued under authority of Interstate Commerce Commission's Released Rates Order No. 1 of March 26, 1917.)

Applying on Freight Traffic covered by Tariffs issued subject thereto.

Issued and filed with the Interstate Commerce Commission by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Board of Railway Commissioners for Canada by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Public Service Commission of Missouri by R. C. Fyfe, as Agent for Missouri lines.

Issued and filed with the Public Utilities Commission of Colorado by R. C. Fyfe, as Agent for Colorado lines.

Issued and filed with the Public Service Commission of Wyoming by R. C. Fyfe, as Agent for Wyoming lines.

Issued and filed with the Public Utilities Commission of Idaho by R. C. Fyfe, as Agent for Idaho lines.

1086 GULF REFINING COMPANY, A CORPORATION, *v3*.

Issued and filed with the Illinois Public Utilities Commission by R. C. Fyfe, as Agent for Illinois lines.

Issued and filed with the Corporation Commission of Oklahoma by R. C. Fyfe, as Agent for Oklahoma lines.

Issued and filed with the State Corporation Commission of New Mexico by R. C. Fyfe, as Agent for New Mexico lines.

Issued April 14th, 1917—*Effective June 15th, 1917* (except as noted in individual items)

The Western Classification Committee, Transportation Building, Chicago, R. C. Fyfe, Chairman.

(Stamped:) Received; Interstate Commerce Commission; 23496; Apr 13 1917; Division of Tariffs.

\* \* \* \* \*

Page 7.

DATE  
ITEM EFFECTIVE

Rule 44.

1 April 20, 1917.

(Re-issue: Item 1, page 6, which cancelled Paragraph 1824 (k) of Rule 44, page 52, Classification 54.)

1824 (k) Liquid condensates from natural gas or from casinghead gas of petroleum oil wells whose vapor tension at 100 degrees F. (90 degrees F. November 1 to March 1) exceeds 10 pounds per square inch, must be described as Liquefied Petroleum Gas. In measuring the vapor tension the container of the sample may be vented momentarily at a temperature of 70 degrees F. This product must be shipped in metal drums or barrels which comply with specification No. 5 and have a nominal capacity not exceeding 55 gallons; or in special insulated tank cars approved for this service by the Master Car Builders' Association, provided the vapor tension as above defined does not exceed 15 pounds per square inch from April 1 to October 1, and 20 pounds per square inch from October 1 to April 1. When the vapor tension as above defined exceed 25 pounds per square inch, cylinders as prescribed for compressed gases (see paragraphs 1861 to 1863, inclusive) must be used.

When the condensate, blended or unblended with other products, has a vapor tension as above defined, not exceeding 10 pounds per square inch, and is shipped as "gasoline" in an ordinary tank car, 60-

pound test class, defined in Master Car Builders' Association Specifications for Tank Cars, the safety valves of such a car must be set to operate at 25 pounds per square inch, with a tolerance of one pound above or below; and the mechanical arrangements for closing the dome cover of this car must either be such as to make it practically impossible to remove the dome cover while the interior of the car is subjected to pressure or suitable vents that will be opened automatically by starting the operation of removing the dome cover must be provided. The shipper must attach securely and conspicuously to the dome and to the dome cover white placards conforming to samples furnished by the Chief Inspector of the Bureau of Explosives, cautioning all railway and refinery employees not to remove the dome cover while interior pressure exists. The presence of these dome placards must be noted on the shipping order, and on the billing accompanying the car. This regulation must be made effective not later than May 15, 1916, at all points where this condensate from natural gas or "casinghead gas" is produced and shipped in a blended or unblended state; and the requirement for construction of dome covers and valve setting at 25 pounds must be made effective not later than April 1, 1917, for all tank car shipments of inflammable liquids with flash points lower than 20 degrees F.

When the "blowing" of safety valves of a car containing inflammable liquids is noted any available means for cooling the car shell and contents, such as spraying with water, should be utilized; and if practicable, the car should be moved to an isolated point, to minimize the fire risk. Covering the safety valves with wet cloth, wet blankets or wet gunny sacks will decrease the danger of igniting vapors escaping from a "blowing" valve. The burning of these vapors at the safety valve is not liable

to cause an explosion. The valves are designed to permit, in emergencies, the burning in this way of the entire contents of the car.

Supplement No. 13 to C. R. C. No. 10 (Cancels Supplement No. 10) (Supplements Nos. 5, 11, 12 and 13 contain all changes) (Supplements Nos. 11 and 12 are Suspension Notices) *Supplement No. 13 to I. C. C. No. 12* (Cancels Supplement No. 10) (Supplements Nos. 5, 11, 12 and 13 contain all changes) (Supplements Nos. 11 and 12 are Suspension Notices) Supplement No. 13 to P. S. C. Missouri No. 3; P. U. C. Colorado No. 3; P. S. C. Wyoming No. 2; P. U. C. Idaho No. 2; Illinois P. U. C. No. 1; C. C. Oklahoma No. 1; S. C. C. New Mexico No. 1 (Cancels Supplement No. 10) (Supplements Nos. 5, 11, 12 and 13 contain all changes) (Supplements Nos. 11 and 12 are Suspension Notices)

#### THE WESTERN CLASSIFICATION NO. 54.

##### *Supplement No. 13.*

(Cancels Supplement No. 10) (Supplements Nos. 5, 11, 12, and 13 contain all changes) (Supplements Nos. 11 and 12 are Suspension Notices) (This supplement contains matter issued on one day's notice, under special permission of the Interstate Commerce Commission No. 42561 of June 1, 1917)

Applying on Freight Traffic covered by Tariffs issued subject thereto.

Issued and filed with the Interstate Commerce Commission by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Board of Railway Commissioners for Canada by R. C. Fyfe, as Agent for the Individual Carriers shown in the Classification and Supplements.

Issued and filed with the Public Service Commission of Missouri by R. C. Fyfe, as Agent for Missouri lines.

Issued and filed with the Public Utilities Commission of Colorado by R. C. Fyfe, as Agent for Colorado lines.

Issued and filed with the Public Service Commission of Wyoming by R. C. Fyfe, as Agent for Wyoming lines.

Issued and filed with the Public Utilities Commission of Idaho by R. C. Fyfe, as Agent for Idaho lines.

Issued and filed with the Illinois Public Utilities Commission by R. C. Fyfe, as Agent for Illinois lines.

Issued and filed with the Corporation Commission of Oklahoma by R. C. Fyfe, as Agent for Oklahoma lines.

Issued and filed with the State Corporation Commission of New Mexico by R. C. Fyfe, as Agent for New Mexico lines.

Issued June 12th, 1917—*Effective August 1st, 1917* (except as noted in individual items)

The Western Classification Committee, Transportation Building, Chicago, R. C. Fyfe, Chairman.

(Stamped:) Received; Interstate Commerce Commission; 40604; Jun 12 1917; Division of Tariffs.

\* \* \* \* \*

Page 3.

\* \* \* \* \*

Changes effective August 1, 1917.

Classification reads:

St. Louis and San Francisco R. R. (James W. Lusk, W. C. Nixon, and W. B. Biddle, Receivers) FX1 No. 95.

Changed to read:

St. Louis-San Francisco Ry. Co. FX1 No. 155.

\* \* \* \* \*

Page 9.

ITEM	DATE EFFECTIVE
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1	April 20, 1917.
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(Reissue: Item 1, page 7, Supp. 10, which was reissue, Item 1, page 6, Supp. 9, which cancelled Paragraph 1824 (k) of Rule 44, page 52, Classification 54.)

Rule 44.

1824 (k) Liquid condensates from natural gas or from casinghead gas of petroleum oil wells whose vapor tension at 100 degrees F. (90 degrees F. November 1 to March 1) exceeds 10 pounds per square inch, must be described as Liquefied Petroleum Gas. In measuring the vapor tension the container of the sample may be vented momentarily at a temperature of 70 degrees F. This product must be shipped in metal drums or barrels which comply with specification No. 5 and have a nominal capacity not exceeding 55 gallons; or in special insulated tank cars approved for this service by the Master Car Builders' Association, provided the vapor tension as above defined does not exceed 15 pounds per square inch from April 1 to October 1, and 20 pounds per square inch from October 1

to April 1. When the vapor tension as above defined exceed 25 pounds per square inch, cylinders as prescribed for compressed gases (see paragraphs 1861 to 1863, inclusive) must be used.

When the condensate, blended or unblended with other products, has a vapor tension as above defined, not exceeding 10 pounds per square inch, and is shipped as "gasoline" in an ordinary tank car, 60-pound test class, defined in Master Car Builders' Association Specifications for Tank Cars, the safety valves of such a car must be set to operate at 25 pounds per square inch, with a tolerance of one pound above or below; and the mechanical arrangements for closing the dome cover of this car must either be such as to make it practically impossible to remove the dome cover while the interior of the car is subjected to pressure or suitable vents that will be opened automatically by starting the operation of removing the dome cover must be provided. The shipper must attach securely and conspicuously to the dome and to the dome cover white placards conforming to samples furnished by the Chief Inspector of the Bureau of Explosives, cautioning all railway and refinery employees not to remove the dome cover while interior pressure exists. The presence of these dome placards must be noted on the shipping order, and on the billing accompanying the car. This regulation must be made effective not later than May 15, 1916, at all points where this condensate from natural gas or "casinghead gas" is produced and shipped in a blended or unblended state; and the requirement for construction of dome covers and valve setting at 25 pounds must be made effective not later than April 1, 1917, for all tank car shipments of inflammable liquids with flash points lower than 20 degrees F.

When the "blowing" of safety valves of a car containing inflammable liquids is

noted any available means for cooling the car shell and contents, such as spraying with water, should be utilized; and if practicable, the car should be moved to an isolated point, to minimize the fire risk. Covering the safety valves with wet cloth, wet blankets or wet gunny sacks will decrease the danger of igniting vapors escaping from a "blowing" valve. The burning of these vapors at the safety valve is not liable to cause an explosion. The valves are designed to permit, in emergencies, the burning in this way of the entire contents of the car.

### Government's Exhibit 38.

Only three supplements to this classification will be in effect at any time.

C. R. C. No. 8 (Cancels C. R. C. No. 7 and supplements)

I. C. C. No. 10 (Cancels I. C. C. No. 9 and supplements)

#### THE WESTERN CLASSIFICATION NO. 52

(Cancels the Western Classification No. 51 and supplements)

Applying on freight traffic covered by tariffs issued subject thereto.

Issued September 15, 1913. *Effective November 1, 1913.*

Issued and filed with the Interstate Commerce Commission by R. C. Fyfe, as agent for the individual carriers shown herein.

Issued and filed with the Board of Railway Commissioners for Canada by R. C. Fyfe, as agent for the individual carriers shown herein.

The Western Classification Committee, Transportation Building, Chicago; R. C. Fyfe, Chairman. Copyright, 1913, by R. C. Fyfe, Chairman.

(Stamped:) Received; Interstate Commerce Commission; 54183; Sep 10, 1913; Division of Tariffs. Cancelled by I. C. C. No. 11; Effective 2-20-1915.

• • • • •  
*Pages i, iv, vii and viii.*

• • • • •  
 This Classification is filed by me with the Interstate Commerce Commission as agent for the following lines:

Kansas City Southern Ry.....FX1 No.34  
 St. Louis & San Francisco R. R. (Thos. H.  
 West, W. C. Nixon, W. B. Biddle, Receivers) ..FX1 No.95  
 St. Louis, San Francisco & Texas Ry...FX1 No.19  
 Avery Turner and G. H. Schleyer, Receivers)  
 Texarkana & Ft. Smith Ry.....FX1 No.28  
 Texas & New Orleans R. R.....FX1 No.22

*Pages 203 & 204*

	OILS:	C.L.
11	Petroleum and Petroleum Products, including Gasoline, Naphtha, :	***
5	Petroleum, as described in Item 11, page 203 of Classification, except Crude Petroleum, Petroleum Gas Oil and Petroleum Fuel Oil, in tank cars, C. L., weight per gallon 6.6 lbs.,	5

**Government's Exhibit 39.**

Only three supplements to this classification will be in effect at any time.

C. R. C. No. 9 (Cancels C. R. C. No. 8 and supplements)  
 I. C. C. No. 11 (Cancels I. C. C. No. 10 and supplements)  
 U. S. C. Mo. No. 2 (Cancels P. S. C. Mo. No. 1 and supplements)

THE WESTERN CLASSIFICATION NO. 53

(Cancels the Western Classification No. 52 and supplements)

Applying on freight traffic covered by tariffs issued subject thereto.

Issued December 31, 1914. *Effective February 20, 1915.*

Issued and filed with the Interstate Commerce Commission by R. C. Fyfe, as Agent for the Individual Carriers shown herein.

Issued and filed with the Board of Railway Commission-

ers for Canada by R. C. Fyfe, as Agent for the Individual Carriers shown herein.

Issued and filed with the Public Service Commission of Missouri by R. C. Fyfe, as Agent for Missouri lines.

The Western Classification Committee, Transportation Building, Chicago; R. C. Fyfe, Chairman. Copyright, 1915, by R. C. Fyfe, Chairman.

(Stamped:) Received; Interstate Commerce Commission; 7412; Jan 8 1915; Division of Tariffs. Cancelled by I. C. C. 12; 9-1-16.

Pages i, v. & viii

This Classification is filed by me with the Interstate Commerce Commission as agent for the following lines:

Kansas City Southern Ry.....FX1 No. 34

St. Louis & San Francisco R. R. (Thos. H. West, W. C. Nixon, W. B. Biddle, Receivers) ..FX1 No. 95

St. Louis, San Francisco & Texas Ry. (Avery Turner and G. H. Schleyer, Receivers) ...FX1 No. 19

Texarkana & Ft. Smith Ry.....FX1 No. 28

Texas & New Orleans R. R.....FX1 No. 22

Pages 253 & 254

#### OILS:

C.L

11 Petroleum and Petroleum Products, including Gasoline, Naphtha, \* \* \* :

2 Petroleum, as described in Item 11, page 253 of Classification, except Crude Petroleum, Petroleum Gas Oil and Petroleum Fuel Oil, in tank cars, C. L., weight per gallon 6.6 lbs., \* \* \* .....

5

#### Government's Exhibit 40.

Only two Supplements to this Tariff will be in effect at any time.

I. C. C. No. 1186. For cancellations, see page 2.

## SOUTHWESTERN LINES TARIFF NO. 79

For cancellations, see page 2.

For Individual Lines Tariff Numbers, see page 2.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads, (see page 8) from Oklahoma producing points (shown on pages 9 to 11, inclusive) to interstate points (see page 12 to 14, inclusive).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items, herein.

Issued March 19, 1917. *Effective May 2, 1917* (except as noted on pages 29, 34 to 37, 67, 70 to 72, inclusive, and 87).

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25080. C. F. 41860.

(Stamped:) Received; Interstate Commerce Commission; 17912; Mar 17 1917; Division of Tariffs. Cancelled by-I. C. C. No. 1219; Effective 4-27-18.

\* \* \* \* \*

Page 2.

### CANCELLATION NOTICE.

Southwestern Lines Tariff No. 79, F. A. Leland's I. C. C. No. 1186, supersedes those portions of:

\* \* \* \* \*

Southwestern Lines' Tariff No. 26T, F. A. Leland's I. C. C. No. 1048, cancelled by Supplement No. 64.

\* \* \* \* \*

Pages 3, 4, 5, &amp; 6.

## PARTICIPATING CARRIERS.

NAMES OF CARRIERS.	Under Powers of Attorney to F. A. Leland Agent	
	FX 1. No.	
Atchison, Topeka and Santa Fe Ry.....	33	
Gulf, Colorado & Santa Fe Ry.....	39	
Kansas City Southern Ry. (The).....	24	
Midland Valley R. R.....	18	
St. Louis-San Francisco Ry. Co.....	137	
Texas & New Orleans R. R. Co.....	12	
Houston & Texas Central R. R. Co.....	16	
Texarkana & Ft. Smith Ry.....	20	
Missouri, Kansas & Texas Ry.....	33	
Charles E. Schaff, Receiver.		
Missouri, Kansas & Texas Ry. of Texas.....	38	
C. E. Schaff, Receiver.		

Pages 9 and 10.

## OKLAHOMA PRODUCING POINTS.

POINTS	RAILROAD LOCATION	GROUP LOCATION
Cushing.....	A. T. & S. F.....	A.....
Jenks.....	M. V. ....	A.....
Jennings.....	M. K. & T.....	A.....
Kiefer.....	St. L.-S. F.....	
(***)	M. V.....	A.....
Drumright.....	A. T. & S. F.	(Jennings (M. K. & T.) rate
(See Notes 2***)		(plus one cent per one
		(hundred pounds.....

Page 11.

Note 2—Rates from Drumright, Frey, Oilton, Pemeta, Player, Ruska and Schlegel, apply via Cushing, Okla., and A. T. & S. F. Ry. only.

# 1096 GULF REFINING COMPANY, A CORPORATION, *vs.*

Page 15.

## GENERAL APPLICATION OF RATES.

ITEM NO.	SUBJECT	APPLICATION
5	Commodity Descriptions	Where reference is made to this Item the rates apply on: (For rates, see pages * * * 39 to 43 inclusive, * * *)  Petroleum Oil and its Products * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth class or lower in current Western Classification; * * * in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 90, or re-issues (See Note).  NOTE.—Rates to all points—except * * * Texas points—will also apply on Liquefied Petroleum Gas, in iron barrels, iron drums, iron cylinders, or specially insulated tank cars, subject to the conditions specified in Rule 44-K of current Western Classification.

Page 17.

## RULES AND CONDITIONS.

SUBJECT	ITEM NO.	RULES
Extent to which rates are governed by Western Classification (R.N.J-1694)	57	The ratings, rules and regulations, estimated and minimum weights, shipping and packing requirements, allowances and privileges, or other provisions or conditions authorized by this Tariff, abrogate and supersede those of Western Classification, in conflict. When the ratings in this Tariff are silent as to rules and regulations, estimated and minimum weights, shipping and packing requirements, allowances and privileges or other provisions or conditions, the ratings which are prescribed in such commodity items shall be subject to the terms (including estimated and minimum weights, shipping and packing requirements, or other provisions or conditions), prescribed for in connection with the ratings in the current Western Classification, on the same commodity.

Page 18.

## RULES AND CONDITIONS.

SUBJECT	ITEM NO.	RULES
Minimum Weights on Commodities in Tank Cars.	90	1. The weights and charges on shipments in tank cars, shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. No. A-722, or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections 2, 3 and 4—unless the weight carrying capacity of the car trucks, is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.

2. When shipments of Inflammable Liquids, subject to Section 1825, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.

Pages 42 and 43.

RATE SECTION NO. 1.

PETROLEUM AND ITS PRODUCTS, AS DESCRIBED IN ITEM NO. 5, OR RE-ISSUES.

TO	FROM	
	Groups A ***	
Rates in Cents Per 100 lbs.		
TEXAS POINTS (***)		
Port Arthur.....		39
West Port Arthur.....		39

Page 78.

MISCELLANEOUS RATES.

Item No.	COMMODITY	FROM (Oklahoma Points)	TO	Rates in cents per 100 lbs.
425	Gasoline in tank cars, minimum weight as pro- vided in Item No. 90, or re-issues. ....	Kiefer....	Port Arthur, Tex. West Port Arthur. ..... Tex.	33

Page 80.

MISCELLANEOUS RATES.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. No. A-722), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum (\*\*\*).

TO TEXAS STATIONS . . .										Rates in Cents Per 100 Pounds.	
Item No. 452	FROM										
Jenks .....	Okla.										
Kiefer .....	Okla.										
Port Arthur.....										19½	

TO TEXAS STATIONS . . .										Rates in Cents Per 100 Pounds.	
FROM . . .											
Item No. 454.	M. K. & T. RY. STATIONS.										
Cushing.....	Okla.	Jennings, Okla.									
T. & N. O. R. R. STATIONS.											
West Port Arthur.....										19½	
Port Arthur.....										19½	

Rates and charges named in this supplement are not subject to increase shown in special supplement (Supplement No. 2), effective July 1, 1917.

*Supplement No. 3 to I. C. C. No. 1186.* Supplements Nos. 1, 2 and 3 contain all changes from the original tariff that are effective on July 14, 1917.

#### SOUTHWESTERN LINES TARIFF NO. 79

For Individual Lines Tariff Numbers, see page 2.

#### *Supplement No. 3*

Supplements Nos. 1, 2 and 3 contain all changes from the original tariff that are effective on July 14, 1917.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads, (see page 8 of tariff) from Oklahoma producing points (shown on pages 9 to 11, inclusive, of tariff, as amended) to interstate points (see pages 12 to 14, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items, herein.

Issued May 29, 1917. *Effective July 10, 1917* (except as noted on page 3, where reference is made to notes 12 and 15; page 7, where reference is made to note 1; page 8, and in items 289, 289A, 342 and 342-A).

Issued by F. A. Leland, Agent, St. Louis, Mo.  
Authority No. 25314.

(Stamped:) Received; Interstate Commerce Commission; 38907; May 31 1917; Division of Tariffs.

Page 3.

OKLAHOMA (\*\*\*) PRODUCING POINTS.

POINTS	RAILROAD LOCATION	GROUP LOCATION
Drumright. . . . .	A. T. & S. F.	(Cushing (A. T. & S. F.) (rate plus one cent (per one hundred pounds
(See Notes 2***)		

*Supplement No. 6 to I. C. C. No. 1186.* Cancels Supplements Nos. 1, 3, 4 and 5. Supplement No. 6 contains all changes from the original tariff that are effective on the date hereof.

SOUTHWESTERN LINES TARIFF NO. 79

For Individual Lines Tariff Numbers, see page 2.

*Supplement No. 6*

Cancels Supplements Nos. 1, 3, 4 and 5. Supplement No. 6 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads, (see page 8 of tariff) from Oklahoma producing points (shown on pages 9 to 11, inclusive, of tariff, as amended) to interstate points (see pages 12 to 14, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items, herein.

Issued July 17, 1917. *Effective August 29, 1917* (except as noted on page 3 where reference is made to note 17; on page 7; in items 287-A, 305-B, 340A, and in other individual items).

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25355.

(Stamped:) Received; Interstate Commerce Commission; 52234; Jul 18 1917; Division of Tariffs.

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Page 2.

OKLAHOMA (***) PRODUCING POINTS.			
POINTS	RAILROAD LOCATION	GROUP LOCATION	
Drumright (See Notes 2***)	A. T. & S. F.	(Cushing (A. T. & S. F.) (rate plus one cent (per one hundred (pounds	

Page 16.

## MISCELLANEOUS RATES.

Item No.	COMMODITY	FROM (Oklahoma Points)	TO	Rates in cents per 100 lbs.
425-B	Gasoline in tank cars, minimum weight as pro- vided in Item No. 90, or re-issues. . . . .	Kiefer. . . . .	Port Arthur, Tex. West Port Arthur. ..... Tex.	33

Page 17.

## MISCELLANEOUS RATES.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-L, E. B. Boyd's I. C. C. No. A-785), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum (\*\*\*) .

TO TEXAS STATIONS * * *		Rates in Cents Per 100 Pounds.
Item No. 454-A, Cance's 454.		
Cushing .....	Okla.	
T. & N. O. R. R. STATIONS:		
West Port Arthur.....		19½
Port Arthur.....		19½
T & FT. S. RY. STATIONS:		
All Stations. . . . .		19½

*Supplement No. 7 to I. C. C. No. 1186.* Cancels Supplement No. 6. Supplement No. 7 contains all changes from the original tariff that are effective on the date hereof.

**SOUTHWESTERN LINES TARIFF NO. 79**

For Individual Lines Tariff Numbers, see page 2.

*Supplement No. 7*

Cancels Supplement No. 6.

Supplement No. 7 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads, (see page 8 of tariff) from Oklahoma producing points (shown on pages 9 to 11, inclusive, of tariff, as amended) to interstate points (see pages 12 to 14, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items, herein.

Issued August 14, 1917. *Effective September 28, 1917* (except as noted on pages 9 and 10, where reference is made to note O, and in other individual items).

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25481.

(Stamped:) Received; Interstate Commerce Commission; 58586; Aug 15 1917; Division of Tariffs.

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Page 4.

## OKLAHOMA (\*\*\*) PRODUCING POINTS.

POINTS	LOCATION RAILROAD	GROUP LOCATION
Drumright (See Notes 2***)	A. T. & S F.	(Cushing (A. T. & S. F.) (rate plus one cent (per one hundred (pounds

Page 5.

## RULES AND CONDITIONS.

SUBJECT	ITEM NO.	RULES
Minimum weights on commodities in tank cars.	90-A *	<p>1. The weights and charges on shipments in tank cars, shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-L, E. B. Boyd's I. C. C. No. A-785, or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections 2, 3 and 4—unless the weight carrying capacity of the car trucks will govern as a minimum.</p> <p>2. When shipments of Inflammable Liquids, subject to Section 1825, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.</p>

Page 19.

## MISCELLANEOUS RATES.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-L, E. B. Boyd's I. C. C. No. A-785), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum (\*\*\*).

TO TEXAS STATIONS ***	Rates in cents per 100 pounds.
Item No. 454-B cancels 454-A.	
Cushing.....Okla.	

# 1104 GULF REFINING COMPANY, A CORPORATION, vs.

## T. & N. O. R. R. STATIONS:

West Port Arthur.....	19½
Port Arthur. . . . .	19½

## T. & FT. S. RY. STATIONS:

All Stations.....	19½
-------------------	-----

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## MISCELLANEOUS RATES.

Item No.	COMMODITY	FROM Oklahoma Points	TO	Rates in cents per 100 lbs.
425-B	Gasoline in tank cars minimum weight as provided in Item No. 90, or reissues.....	Kiefer	Port Arhur, Tex. West Port Arthur, Tex.	33
	Reissue; effective August 29, 1917, in Supplement No. 6.			

*Supplement No. 8 to I. C. C. No. 1186.* Cancels Supplement No. 7. Supplement No. 8 contains all changes from the original tariff that are effective on the date hereof.

## SOUTHWESTERN LINES TARIFF NO. 79

For Individual Lines Tariff Numbers, see page 2.

### *Supplement No. 8*

Cancels Supplement No. 7. Supplement No. 8 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads, (see page 8 of tariff) from Oklahoma producing points (shown on pages 9 to 11, inclusive, of tariff, as amended) to interstate points (see pages 12 to 14, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Frye's I. C. C. No. 12), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by

the carriers parties to this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items, herein.

Issued September 29, 1917. *Effective November 12, 1917* (except as noted on page 4, where reference is made to note 20; on page 16, where reference is made to note 4, and in other individual items).

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25585.

(Stamped:) Received; Interstate Commerce Commission; 64955; Sep 29 1917; Division of Tariffs.

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OKLAHOMA (\*\*\*) PRODUCING POINTS.

POINTS					Railroad Location	Group Location				
*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*
*	*	*	*	*	*	*	*	*	*	*
Drumright (See Notes 2 ***)					A. T. & S. F. (Cushing (A.T.&S.F.) (rate plus one cent (per one hundred (pounds					*
*	*	*	*	*	*	*	*	*	*	*

Page 5.

RULES AND CONDITIONS.

SUBJECT	Item No.	RULES.
Minimum weights on commodities in Tank Cars	90-A cancels 90	1. The weights and charges on shipments in tank cars, shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-L, E. B. Boyd's I. C. C. No. A-785, or reissues), at actual or estimated weights provided in current Western Classification—except as provided in Sections 2, 3 and 4—unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.
Reissue; effective September 28, 1917, in Supplement No. 7.		2. When shipments of INFAMMABLE LIQUIDS, subject to Section 1825. Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.
*	*	*

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## MISCELLANEOUS RATES.

Item No.	COMMODITY	FROM Oklahoma Points	TO	Rates in cents per 100 lbs.
425-B	Gasoline in tank cars, minimum weight as provided in Item No. 90, or reissues.....	Kiefer	Port Arthur, Tex. West Port Arthur, Tex.	33
Relissue: effective August 29, 1917, in Supplement No. 6.				

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## MISCELLANEOUS RATES.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-L, E. B. Boyd's I. C. C. No. A-785), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum (\*\*\*).

TO TEXAS STATIONS * * *				Rates in cents per 100 pounds.
Item No. 454-C cancels 454 B.	FROM OKLAHOMA POINTS.			
	Cushing			
T. & N. O. R. R. STATIONS:				
	West Port Arthur.....			19½
	Port Arthur. . . . .			19½
T. & FT. S. RY. STATIONS:				
	All stations.....			19½

*Supplement No. 11 to I. C. C. No. 1186.* Cancels Supplement No. 10. Supplements Nos. 8, 9 and 11 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 9 suspends portions of Supplement No. 7.

## SOUTHWESTERN LINES TARIFF NO. 79

For Individual Lines Tariff Numbers, see page 2.

*Supplement No. 11.*

Cancels Supplement No. 10. Supplements Nos. 8, 9 and 11 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 9 suspends portions of Supplement No. 7.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads, (see page 8 of tariff) from Oklahoma producing points (shown on pages 9 to 11, inclusive, of tariff, as amended) to interstate points (see pages 12 to 14, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items, herein.

Issued December 12, 1917. *Effective January 24, 1918* (except as noted on page 3 where reference is made to note 15, and on page 7 where reference is made to note 4 and in other individual items).

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25730.

(Stamped:) Received; Interstate Commerce Commission; 1574; Dec 15 1917; Division of Tariffs.

\* \* \* \* \*

Page 8.

#### MISCELLANEOUS RATES.

\* \* \* \* \*

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-L, E. B. Boyd's I. C. C. No. A-785), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum (\*\*\*).

TO TEXAS STATIONS ***										Rates in cents per 100 pounds
Item No. 452-A cancels 452.										
*	*	*	*	*		*	*	*	*	*
					FROM					
*	*	*	*	*	*	*	*	*	*	*
					Jenks. . . . .	Okla.				
					Kiefer. . . . .	Okla.				
Port Arthur . . . . .										19½
*	*	*	*	*	*	*	*	*	*	*

*Supplement No. 13 to I. C. C. No. 1186.* Cancels Supplement No. 11. Supplements Nos. 8, 12 and 13 contain all changes from the original tariff that are effective on the date hereof. Supplement No. 12 suspends portions of Supplement No. 7.

#### SOUTHWESTERN LINES TARIFF NO. 79

For Individual Lines Tariff Numbers, see page 2.

##### *Supplement No. 13*

Cancels Supplement No. 11. Supplements Nos. 8, 12 and 13 containing all changes from the original tariff that are effective on the date hereof. Supplement No. 12 suspends portions of Supplement No. 7.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads, (see page 8 of tariff) from Oklahoma producing points (shown on pages 9 to 11, inclusive, of tariff, as amended) to interstate points (see pages 12 to 14, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items, herein.

Issued February 14, 1918. *Effective March 28, 1918* (except as noted in individual items).

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25820.

(Stamped:) Received; Interstate Commerce Commission; 8886; Feb 15 1918; Division of Tariffs.

Page 3.

GENERAL APPLICATION OF RATES.

Item No.	SUBJECT	APPLICATION
5-A	Commodity	Where reference is made to this Item the rates
* cancels	Descriptions.	apply on: (For rates, see pages *** 39 to 43, inclusive, ***).
5		Petroleum Oil and its Products *** listed under head of "Petroleum and Petroleum Products," and rated Fifth Class or lower in current Western Classification *** in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 90-A, or re-issues.
		NOTE.—* * * Eliminate: Liquefied Petroleum Gas, now shown in Western Classification, under caption: "Petroleum or Petroleum Products."

Page 8.

MISCELLANEOUS RATES.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-M, E. B. Boyd's I. C. C. No. A-826), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum (\*\*\*).

TO TEXAS STATIONS \* \* \*

Rates in cents  
per 100 pounds.

Item No. 452-B cancels 452-A.

FROM

Jenks. . . . .Okla.  
Kiefer. . . . .Okla.

Port Arthur. . . . . 19 1/2

**Government's Exhibit 41.**

Only two supplements to this tariff will be in effect at any time.

*I. C. C. No. 1129.* Cancels *I. C. C. No. 1186* Except those portions under suspension in Investigation and Suspension Docket No. 1146, as per Supplement No. 12.

**SOUTHWESTERN LINES TARIFF NO. 79-A**

Cancels Southwestern Lines' Tariff No. 79, except those portions under suspension in Investigation and Suspension Docket No. 1146, as per Supplement No. 12. For Individual Lines Tariff Numbers, current and cancelled, see page 2.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads (see page 8), from Oklahoma producing points and Ft. Smith, Ark. (shown on pages 10 to 13, inclusive), to interstate points (see pages 13 to 16, inclusive).

Governed, except as otherwise provided herein, by Western Classification No. 54 (R. C. Fyfe's *I. C. C. No. 12*), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of rule 77 of Interstate Commerce Commission. Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties of this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Issued February 28, 1918. *Effective April 27, 1918* (except as noted on page 11 where reference is made to note 15).

Changes which result from additions of or abandonment of stations and station facilities contained in this tariff are filed under authority of the Interstate Commerce Commission's Fifteenth Section Order No. 250 of January 8, 1918,

without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25849. C. F. 41860.

(Stamped:) Received: Interstate Commerce Commission; 10291; Mar 1 1918; Division of Tariffs. Cancelled by-I. C. C. No. 1253; Effective 12-31-1918.

Pages 3, 4, 5 and 7.

### PARTICIPATING CARRIERS.

* NAMES OF CARRIERS	Under Powers of Attorney to F. A. Leland Agent.		*
	FX 1, No.		
* Atchison, Topeka and Santa Fe Ry. Co. (The)...	33	..	*
* Gulf, Colorado & Santa Fe Ry. Co.....	39		*
* Kansas City Southern Ry. Co. (The).....	24		*
* Midland Valley R. R. Co.....	18		*
* St. Louis-San Francisco Ry. Co.....	137		*
* Houston & Texas Central R. R. Co.....	16		*
* Texas & New Orleans R. R. Co.....	12		*
* Texarkana & Ft. Smith Ry. Co.....	20		*

Page 10.

### OKLAHOMA (\*\*\*) PRODUCING POINTS.

POINTS	Railroad Location	Group Location	*
Cushing. . . . .	A. T. & S. F.	A.....	*
Drumright. . . . .	A. T. & S. F.	(Cushing (A. T. & S. F.) rate (plus one cent per one hun- (dred pounds.	*
(See Note *** 2.)			*

# 1112 GULF REFINING COMPANY, A CORPORATION, vs.

Page 11.

## OKLAHOMA (\*\*\*) PRODUCING POINTS—\*\*\*

POINTS	Railroad Location	Group Location	*
* * *	* * *	* * *	*
Jenks. ....	M. V. ....	A. ....	*
* * *	* * *	* * *	*
Kiefer. ....	(St. L.-S. F. ....	A. ....	*
(***)	(M. V.		
* * *	* * *	* * *	*

Page 13.

NOTE 2.—Rates from Drumright \* \* \* apply via Cushing, Okla., and A. T. & S. F. Ry. only.

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## GENERAL APPLICATION OF RATES.

Item. No.	SUBJECT	APPLICATION.
* * *	* * *	* * *
5	Commodity Descriptions	Where reference is made to this item the rates apply on: (For rates, see pages *** 39 to 43, inclusive, ***).
		Petroleum Oil and its Products * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class or lower in current Western Classification * * * in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 90, or re-issues.
* * *	* * *	* * *

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## RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
Extent to which rates are governed by Western Classification.	57	<p>The ratings, rules and regulations, estimated and minimum weights, shipping and packing requirements, allowances and privileges, or other provisions or conditions authorized by this tariff abrogate and supersede those of Western Classification, in conflict.</p> <p>When the ratings in this tariff are silent as to rules and regulations, estimated and minimum weights, shipping and packing requirements, allowances and privileges or other provisions or conditions, the ratings which are prescribed in such commodity items shall be subject to the terms (including estimated and minimum weights, shipping and packing requirements, or other provisions or conditions), prescribed for in connection with the ratings in the current Western Classification on the same commodity.</p>

Page 19.

## RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
Minimum weights on commodities in tank cars.	90	<p>1. The weights and charges on shipments in tank cars, shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 4-M, E. B. Boyd's I. C. C. No. A-826, or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections 2, 3 and 4—unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.</p> <p>2. When shipments of Inflammable Liquids, subject to Section 1825, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.</p>

Pages 42, 43.

## PETROLEUM AND ITS PRODUCTS, AS DESCRIBED IN ITEM NO. 5, OR RE-ISSUES.

TO	FROM (See pages 10 to 13, inclusive.) Groups A *** Rates in cents per 100 pounds.
TEXAS POINTS (***)	
Port Arthur.....	39
West Port Arthur.....	39

Pages 55 and 59.

TO	Crude *** Petroleum Oil *** FROM (See pages 10 to 13, inclusive.) Groups A *** Rates in cents per 100 pounds.
TEXAS POINTS (***)	
Port Arthur.....	17½

# 1114 GULF REFINING COMPANY, A CORPORATION, vs.

West Port Arthur.....	17½
-----------------------	-----

Page 79.

## MISCELLANEOUS RATES.

Item No.	COMMODITY	FROM (Oklahoma Points)	TO	Rates in cents per 100 lbs.
660	Gasoline in tank cars, minimum weight as provided in Item No. 90, or re-issues.....	Kiefer.....	Port Arthur, Tex West Port Arthur, Tex.	33

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## MISCELLANEOUS RATES.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-M, E. B. Boyd's 1 C. C. No. A-826), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the car trucks will govern as minimum (\*\*\*).

TO TEXAS STATIONS * * *				Rates in cents per 100 pounds.
Item No. 705.	FROM			
	Jenks. . . . .Okla.			
	Kiefer. . . . .Okla.			
	Port Arthur.....			19½

Item No. 715.

## From Oklahoma Points.

Cushing.	
T. & N. O. R. R. STATIONS:	
West Port Arthur.....	19½
Port Arthur. . . . .	19½
T. & FT. S. RY. STATIONS:	
All stations.....	19½

*Special Supplement to I. C. C. Nos. shown herein*

**SPECIAL SUPPLEMENT TO TARIFFS**

Issued by F A. Leland, Agent.

Applying in connection with participating carriers shown in tariffs and supplements thereto enumerated herein.

**INCREASE IN FREIGHT RATES.**

Freight rates name din tariffs and supplements thereto, listed on pages 7 to 9, inclusive, are hereby increased to the rates shown in column 8 of rate table on pages 4 to 6, inclusive. (See application of rates, page 2.)

Increased joint rates and charges contained in this schedule are filed on one day's notice under authority of Interstate Commerce Commission's Fifteenth Section Order No. 666 of May 27, 1918, without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

This schedule contains rates that are departures from the terms of the amended Fourth Section of the Act of Regulate Commerce under authority of the Interstate Commerce Commission, Fourth Section Order No. 7316, of May 27, 1918.

The form of this supplement is permitted by authority of the Interstate Commerce Commission, Special Permission No. 45950, of May 27, 1918.

Issued June 18, 1918. *Effective June 25, 1918.*

The rates made effective by this schedule are initiated by the President f the United States through the Director General, United States Railroad Administration, and apply to interstate traffic only.

This schedule is published and filed on one day's notice with the Interstate Commerce Commission under General Order No. 28 of the Director General, United States Railroad Administration, dated May 25, 1918, and amended June 12, 1918.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 26007.

(Stamped:) Received; Interstate Commerce Commission; 34213; Jun 21 1918; Division of Tariffs. *Supt. No. 4; I. C. C. No. 1219.*

\* \* \* \* \*

# 1116 GULF REFINING COMPANY, A CORPORATION, v.s.

Pages 2 and 4.

## RULES.

### RATES IN CENTS (EXCEPT CENTS PER CAR).

1. Where rates named in tariffs or prior supplements thereto, as enumerated herein, in cents per hundred pounds, per package, per ton, per shipment, or other unit (except rates in cents per car—see Rule 6) are included in the figures shown in Column A, the rates shown opposite thereto in Column B will apply.

### APPLICATION OF RATES.

Effective June 25, 1918, all rates then in effect named in tariffs enumerated herein and in prior supplements thereto, as indicated, to each of which tariffs this is a special supplement, are increased to the rates shown in Column B in Table of Rates on pages 4 to 6, inclusive, hereof. \* \* \*

TABLE OF RATES—SUBJECT TO APPLICATION OF RATES AND TO RULES, PAGE 2 \* \* \*  
(\* \* \*)

Over		A	But not over		B
*	*	*	*	*	*
	17.39	*	17.79	*	22
	19.39	*	19.79	*	24½
	20.19	*	20.59	*	25½
	32.99	*	33.39	*	41½
	38.99	*	35.39	*	49
	39.79	*	40.19	*	50

Page 7.

### LIST OF TARIFFS SUPPLEMENTED HEREBY.

NOTE.—The increases made by this supplement apply to the entire rates as named in the tariffs listed below, whether such rates are published as specific totals or are made up by use of differentials or arbitrarliers.

I. C. C. No.	Supplement No.	Southwestern Lines No.	Supplements Containing All Changes from the Original Tariff
1219	4	79-A	2, 3, 4

Rates and charges named in this supplement are not subject to increases shown in Special Supplement No. 4.

*Supplement No. 5 to I. C. C. No. 1219.* Supplements Nos. 2, 3, 4 and 5 contain all changes from the original tariff that are effective on the date hereof.

**"UNITED STATES RAILROAD ADMINISTRATION,  
W. G. McAdoo, Director General of Railroads"**

**SOUTHWESTERN LINES TARIFF NO. 79-A**

For Individual Lines Tariff Numbers, see page 2.

*Supplement No. 5*

Supplements Nos. 2, 3, 4 and 5 contain all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads (see page 8 of tariff), from Oklahoma producing points and Ft. Smith, Ark. (shown on pages 10 to 13, inclusive, of tariff, as amended), to interstate points (see pages 13 to 16, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 55 (R. C. Fyfe's I. C. C. No. 13), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties of this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Issued July 24, 1918. *Effective July 29, 1918.*

Published for the Director General of Railroads and filed on one day's notice with the Interstate Commerce Commission under Freight Rate Authority No. 96 of the Director, Division of Traffic, United States Railroad Administration, dated July 11, 1918.

The form of this supplement is permitted by authority of Interstate Commerce Commission Special Permission No. 47201 of July 18, 1918.

Issued by F. A. Leland, Agent, St. Louis, Mo.

**Authority No. 26052.**

(Stamped:) Received; Interstate Commerce Commission; 49097; Jul 27, 1918; Division of Tariffs.

Page 2.

Rates on Petroleum and Petroleum Products rated Fifth Class in current Western Classification are hereby increased four and one-half (4½) cents per 100 pounds on shipments moving exclusively via lines shown in Note A on page 3 hereof.

NOTE—This cancels application of Column B rate in Supplement No. 4 on the above articles on shipments moving exclusively via lines shown in Note A on page 3 hereof. (\*\*\*)

Page 3.

**NOTE A.**

Atchison, Topeka &amp; Santa Fe Ry.

Gulf, Colorado & Santa Fe Ry.

Houston &amp; Texas Central R. R.

Kansas City Southern Ry.

Midland Valley R. R.

St. Louis-San Francisco Ry.

Texarkana & Ft. Smith Ry.

Texas & New Orleans R. R.

Rates and charges named in this supplement are not subject to increases shown in Special Supplement No. 4.

**Supplement No. 6 to I. C. C. No. 1219.** (Cancels Supplement No. 5) Supplements Nos. 2, 3, 4 and 6 contain all changes from the original tariff that are effective on the date hereof.

**"UNITED STATES RAILROAD ADMINISTRATION  
W. G. McAdoo, Director General of Railroads"**

SOUTHWESTERN LINES TARIFF NO. 79-A

**For Individual Lines Tariff Numbers, see page 2.**

Supplement No. 6

(Cancels Supplement No. 5) Supplements Nos. 2, 3, 4

and 6 contain all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt, carloads (see page 8 of tariff), from Oklahoma producing points and Ft. Smith, Ark. (shown on pages 10 to 13, inclusive, of tariff, as amended), to interstate points (see pages 13 to 16, inclusive, of tariff).

Governed, except as otherwise provided herein, by Western Classification No. 55 (R. C. Fyfe's I. C. C. No. 13), or re-issues thereof.

The rates named in this tariff are subject to the conditions of the carrier's bills of lading.

By authority of rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties of this tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individu items herein.

Issued August 8, 1918. *Effective August 15, 1918.*

Published for the Director General of Railroads and filed on one day's notice with the Interstate Commerce Commission under Freight Rate Authority No. 96 of the Director, Division of Traffic, United States Railroad Administration, dated July 11, 1918.

Issued on one day's notice under special permission of the Interstate Commerce Commission No. 47226 of July 26, 1918.

The form of this supplement is permitted by authority of Interstate Commerce Commission Special Permission No. 47201 of July 18, 1918.

Issued by F. A. Leland, Agent, St. Louis, Mo.  
Authority No. 26075.

(Stamped:) Received; Interstate Commerce Commission; 51067; Aug 10 1918; Division of Tariffs.

\* \* \* \* \*

Page 2.

\* \* \* \* \*

Item No. 56.

Rates on Petroleum and Petroleum Products \* \* \* are hereby increased four and one-half (4½) cents per 100 pounds \* \* \*.

\* \* \* \* \*

NOTE 2.—This cancels application of Column B rates in Supplement No. 4 on Petroleum and Petroleum Products rated Fifth Class in current Western Classification, \* \* \* on shipments moving \* \* \* via lines \* \* \* named in Note A on page 3 hereof.

Page 3.

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NOTE A.

* * * * *	* * * * *
Atchison, Topeka & Santa Fe Ry.	* * * * *
* * * * *	* * * * *
Gulf, Colorado & Santa Fe Ry.	* * * * *
* * * * *	* * * * *
Houston & Texas Central R. R.	* * * * *
* * * * *	* * * * *
Kansas City Southern Ry.	* * * * *
* * * * *	* * * * *
Midland Valley R. R.	* * * * *
* * * * *	* * * * *
St. Louis-San Francisco Ry.	* * * * *
* * * * *	* * * * *
Texarkana & Ft. Smith Ry.	* * * * *
* * * * *	* * * * *
Texas & New Orleans R. R.	* * * * *
* * * * *	* * * * *

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**Government's Exhibit 50.**

**Government's Exhibit 42.**

Only three supplements to this classification will be in effect at any time.

C. R. C. No. 11 (Cancels C. R. C. No. 10 and supplements)  
S. B. No. 1 I. C. C. No. 13 (Cancels I. C. C. No. 12 and supplements).

P. S. C. Mo. No. 4 (Cancels P. S. C. Mo. No. 3 and supplements); P. U. C. Colo. No. 4 (Cancels P. U. C. Colo. No. 3 and supplements); P. S. C. Wyoming No. 3 (Cancels P. S. C. Wyoming No. 2 and supplements); P. U. C. Idaho No. 3 (Cancels P. U. C. Idaho No. 2 and supplements); Illinois P. U. C.

No. 2 (Cancels Illinois P. U. C. No. 1 and supplements); Corporation Commission Oklahoma No. 2 (Cancels Corporation Commission Oklahoma No. 1 and supplements); S. C. C. New Mexico No. 2 (Cancels S. C. C. New Mexico No. 1 and supplements); P. U. C. Utah No. 1.

### THE WESTERN CLASSIFICATION NO. 55.

(Cancels the Western Classification No. 54 and supplements)

Increased ratings, rules and regulations in this classification are filed under authority of the Interstate Commerce Commission fifteenth section orders number 195 of December 27, 1917, and number 233 of January 10, 1918, without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

Applying on freight traffic covered by tariffs issued subject thereto.

Issued February 1, 1918. *Effective April 1, 1918.*

Issued and filed with the following commissions by R. C. Fyfe, Agent for the Individual Carriers shown herein: Interstate Commerce Commission, Board of Railway Commissioners for Canada, United States Shipping Board, Public Service Commission of Missouri, Public Utilities Commission of Colorado, Public Service Commission of Wyoming, Public Utilities Commission of Idaho; Illinois Public Utilities Commission, Corporation Commission of Oklahoma, State Corporation Commission of New Mexico, Michigan Railroad Commission, Public Utilities Commission of Utah.

The Western Classification Committee, W. E. Prendergast, H. C. Bush, R. C. Fyfe, Chairman, Transportation Building, Chicago. Copyright, 1918, by R. C. Fyfe, Chairman.

(Stamped:) Received: Interstate Commerce Commission; 7330; Feb. 5, 1918; Division of Tariffs. Cancelled by-I. C. C. No. 14; Effective 12-30-1919.

\* \* \* \* \*

Page i.

### TABLE OF CONTENTS OF THE WESTERN CLASSIFICATION NO. 55. I. C. C. No. 13.

SUBJECT	Page No.
Index to Rules.....	xli to xlv
Rules and Conditions.....	1 to 98

# 1122 GULF REFINING COMPANY, A CORPORATION, vs.

Pages i, iv, v, vii & viii.

This classification is filed with the Interstate Commerce Commission by R. C. Fyfe, Chicago, Ill., as agent for the following lines:

Atchison, Topeka & Santa Fe Ry.....	FX1 No. 63
Gulf, Colorado & Santa Fe Ry.....	FX1 No. 40
Houston & Texas Central R. R.....	FX1 No. 23
Kansas City Southern Ry.....	FX1 No. 34
Midland Valley R. R.....	FX1 No. 26
St. Louis-San Francisco Ry. Co.....	FX1 No. 155
St. Louis, San Francisco and Texas Ry. Co..	FX1 No. 31
Texarkana & Ft. Smith Ry.....	FX1 No. 28
Texas & New Orleans R. R.....	FX1 No. 22

Pages xii, xiii and xiv.

## INDEX TO RULES.

	Rule No.	Page No.
Commodities in Tank Cars.....	32	15
Dangerous Articles other than explosives.....	44	50
Inflammable articles.....	44	50
Transportation of Dangerous Articles other than explosives..	44	50

Pages 1 and 15.

## RULES AND CONDITIONS OF THE WESTERN CLASSIFICATION.

### RULE 32.

Section 5. When shipments of inflammable liquids subject to Section 1825, Rule 44, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank to cover the difference between the dome capacity and the two (2) per cent outage.

Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.

## RULE 44.

*Interstate Commerce Commission*

## REGULATIONS

for the

*Transportation of Dangerous Articles Other Than  
Explosives by Freight.*

Prescribed under the act of March 4, 1909, and section 15 of the act to regulate commerce, as amended June 18, 1910. Revisor formulated and published July 2, 1914, effective October 1, 1914, and superseding regulations published January 1, 1912.

## GENERAL NOTICE.

1701. Special precautions are necessary in preparing for shipment packages of dangerous articles other than explosives, and in handling these packages during transit. Any failure of a shipper, or of a carrier, to perform the duties imposed upon him in this respect may be the actual or a contributory cause not only of destructive fires but of disastrous explosions, since large quantities of explosives are transported frequently through thickly populated districts and in trains containing cars loaded with other dangerous articles.

1702. Sections 235 and 236 of the act of March 4, 1909, require the shipper of dangerous articles to describe and mark his packages properly and to inform the agent of the carrier of the true character of their contents. Heavy penalties are provided for the shipper who, knowingly, solicits the transportation of dangerous articles without complying with these requirements, as well as for the carrier that knowingly transports them.

1703. To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation by land in interstate commerce of dangerous articles other than explosives, the following regulations are prescribed to define these articles for freight transportation purposes, to state the precautions that must be observed by the shipper in preparing them for shipment, and by the carrier in handling them while in transit. It is the duty of each such carrier and shipper to make the prescribed regulations effective and to thoroughly instruct their employees in relation thereto.

1704. These regulations apply to all shipments of dangerous articles other than explosives, including carriers' material and supplies.

1705. Specifications as to containers, methods of packing for shipment, etc., will be considered and prescribed from time to time. Orders prescribing such specifications will be given effective dates as conditions and investigations may appear to warrant.

1706. The Bureau for the Safe Transportation of Explosives and other Dangerous Articles, hereinafter called Bureau of Explosives, organized by the railways under the auspices of the American Railway Association, is an efficient bureau in charge of an expert chief inspector. This bureau will make inspections and conduct investigations and will confer with manufacturers and shippers with a view to determining what specifications and regulations will within reasonable limits afford the highest degree of safety in packing and preparing these dangerous articles for shipment and in transporting the same. The Commission will seek to avail itself of the expert knowledge thus developed and, in formulating amendments to these regulations or specifications supplemental thereto, while not bound thereby, will give due weight to such expert opinions.

#### GENERAL RULES.

1711. Carriers that are subject to the act to regulate commerce must not receive shipments of articles defined as dangerous by these regulations when the shipments are not packed, marked, labeled, described, and certified as prescribed herein. The method of manufacture and packing of articles defined as dangerous by these regulations, so far as it affects safe transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives.

1712. All shipments of articles subject to these regulations offered for transportation in interstate commerce must be properly described by the shipper in his shipping order and bill of lading under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

The same description of contents must be marked plainly on the outside of each package.

In less-than-carload shipments each package must be marked also to show plainly the name and address of the consignee. This address, the name of contents, and the required label or "no label required" marking, should be as near together as practicable.

1713. All shipments of articles defined as dangerous by these regulations, and for which detailed instructions for pack-

ing are not given herein, must be securely packed in containers strong enough to stand without rupture or leakage of contents all ordinary shocks incident to reasonably careful handling during transit. It is the duty of shippers, where leakage from their shipping containers is known to be a probable source of fire or material damage to other freight, to exercise special care in constructing shipping containers for such articles, even though their names do not appear in the list of dangerous articles, paragraph 1807.

1714. Carriers must forward shipments of dangerous articles other than explosives promptly and within 48 hours after acceptance at originating point or receipt at transfer station or at interchange point, and consignees must remove such shipments from the carriers' property within 48 hours after notice of arrival at destination, Sundays and holidays not included.

1715. (a) *Serious violations of these regulations, such as the discovery of leaking or broken packages of dangerous articles, and accidents or fires in connection with the transportation or storage on carrier's property of dangerous articles, must be reported by the carrier to the chief inspector of the Bureau of Explosives, 30 Vessey Street, New York City.*

(b) Consignees should report promptly to the chief inspector, Bureau of Explosives, all instances of broken or defective containers in shipments of dangerous articles received by them.

#### SECTION I. INFORMATION AND DEFINITIONS.

1800. For transportation purposes dangerous articles other than explosives are divided into the following groups:

1. *Forbidden articles.*
2. *Acceptable articles.*

##### GROUP 1.—FORBIDDEN ARTICLES.

1801. The following are *forbidden articles*:

(a) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(b) Cylinders containing gases capable of combining chemically.

(c) Packages containing dangerous articles in a leaking condition or in such an insecure condition as to make leakage probable during transit.

(d) Rags or cotton waste oily with more than 5 per cent of vegetable or animal oil, or wet rags.

(e) Charcoal screenings from wet charcoal, or wet screenings, or screenings that have been wet. (See par. 1833 (c).)

(f) Dangerous articles not properly packed, marked, labeled, described, and certified.

(g) Iron sponge and spent oxide that has not been properly oxidized during manufacture.

GROUP 2.—ACCEPTABLE ARTICLES.

Definitions

*Inflammable Liquids—Red Label.*

1802. This group includes any liquid or liquid mixture that gives off inflammable vapors (as determined by flash point from Tagliabue's open cup tester, as used for test of burning oils) at or below a temperature of 80° F.

*Inflammable Solids—Yellow Label.*

1803. This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

*Oxidizing Materials—Yellow Label.*

1804. This group includes all substances, such as chlorates, permanganates, peroxides, and nitrates, that yield oxygen readily to stimulate the combustion of organic matter.

*Corrosive Liquids—White Label.*

1805. This group includes the strong mineral acids (in strength greater than one-half concentrated, i. e., 47 per cent sulphuric, 34 per cent nitric, 20 per cent hydrochloric) and other strongly corrosive liquids that are liable to cause fires when mixed with chemicals or with organic matter, or are liable, in case of leakage from their shipping containers, to damage other freight materially.

*Compressed Gases—Red or Green (Gas) Label.*

1806. This group includes all inflammable or non-inflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding  $\frac{7}{8}$  inch outside diameter and of not more than 4 fluid ounces water capacity.

LIST OF PRINCIPAL DANGEROUS ARTICLES.

1807. (a) The following list shows the names of well-known articles in general use, other than explosives, that are

dangerous; the kind of label required on outside packages; the quantities that may be shipped in one outside package without a label when certified and marked "No label required," and the label exemptions on account of specified packing. (See column 5 of list.)

(b) When a shipment described under a name not in the following list is defined as a dangerous one by paragraphs 1802 to 1806, inclusive, the shipper must inform the carrier of the fact by use of the proper label prescribed herein, and the shipping order must show the certificate prescribed by paragraph 1867. The maximum quantity of any such article shipped in one outside package, without label, when certified and marked "No label required," except as specified herein, must not exceed the limit prescribed by column 3 of the list for dangerous articles of similar flash point or characteristic.

(c) Inflammable liquids as defined by paragraph 1802, in securely closed glass, earthenware, or metal containers of not exceeding one pint capacity each, when flash point is 20° F., or lower, and of not exceeding one quart capacity when flash point is above 20° F., packed and cushioned in fiberboard or corrugated strawboard containers, wooden boxes, kegs, or barrels, complying with shipping container specifications that apply, may be shipped without labels when certified and marked "No label required."

(d) A shipment described under a definite and proper name not in the following list and on a shipping order with no notation as to labels applied and no shipper's certificate, will be assumed by the carrier in the absence of knowledge to the contrary, to be not dangerous under these regulations.

(e) When articles described under names in the following list marked (\*) are not dangerous under the regulations, the shipper must, unless otherwise provided in said list, state on his shipping order, as a part of the description of such article "No label required," and must also furnish the certificate prescribed by paragraph 1867 and mark the package "No label required."

(f) When several dangerous articles are placed in one outside package without violating these regulations, labels must be applied, when the combined quantity of the articles of any one group exceeds the lowest limit prescribed by column 3 for any of the articles of that group that are included.

(g) When dangerous articles requiring the red label are shipped in the same outside package with dangerous articles requiring yellow or white labels, the outside package must be labeled with the red label only.

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

1 Names of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
1	2	3	4	5
*Acetate, amly..... Acetate, ethyl..... Acetate, methyl..... Acetone (ethyl methyl ketone).	Inf. L..... do..... do..... do.....	1 gallon..... do..... do..... do.....	Red..... do..... do..... do.....	Para. 1807 (c), 1822, 1824 to 1827. Do. Do. Do.
*Acid, hydrochloric (muriatic).	Cor. L.....	5 pints (6 pounds).....	White.....	Para. 1805, 1851, 1852 and 1856.
Acid, hydrofluoric..... Acid, nitrating (mixed acid).	do..... do.....	do..... No exemption.....	do..... do.....	Para. 1851, 1852 and 1854. Mixed nitric and sulphuric acids, par. 1858.
*Acid, nitric..... *Acid, sulphuric.....	do..... do.....	do..... 5 pints (9 pounds).....	do..... do.....	Para. 1805, 1851, 1852 and 1857. Para. 1805, 1851, 1852 and 1856.
Alcohol..... Alcohol, denatured..... Alcohol, wood.....	Inf. L..... do..... do.....	1 gallon..... do..... do.....	Red..... do..... do.....	Para. 1807 (c), 1822, 1824 to 1827. Do. Do.
Ammonium perchlorate..... Barium, chlorate of..... Barium, nitrate of, in bags.....	Oxi. M..... do..... do.....	25 pounds..... do..... 100 pounds (in one shipment).	Yellow..... do..... do.....	Para. 1822 and 1841. Do. Para. 1822 and 1841. (See Nitrates.)
Barium peroxide (binoxide, dioxide).	do.....	25 pounds.....	do.....	Para. 1822 and 1841.

Benzol (benzene).....	Inf. L.....	20	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Benzine.....	do.....	†0	do.....	do.....	Do.
Bromine.....	Cor. L.....		5 pints.....	White.....	Par. 1853.
Bronzing liquid.....	Inf. L.....	0-70	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Burak cotton.....	Inf. S.....		No exemption.....	Yellow.....	Par. 1837.
Calcium phosphide.....	do.....		do.....	do.....	Par. 1835.
Carbon bisulphide.....	Inf. L.....	†0	5 pounds.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Celluloid scrap.....	Inf. S.....		No exemption.....	Yellow.....	Par. 1839.
Cement, leather.....	Inf. L.....	†0	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
•Cement, liquid, n. o. s.....	do.....	0-80	do.....	do.....	Do.
•Cement, roofing (liquid).....	do.....	0-80	do.....	do.....	Do.
Cement, rubber.....	do.....	†0	do.....	do.....	Do.
Charcoal, wood, ground or pulverized.....	Inf. S.....		100 pounds.....	Yellow.....	(Par. 1833. Charcoal "in bottles," "in boxes," "in barrels," or "in tablets," "case-hardening charcoal," "animal charcoal," or "bone charcoal" is exempt from label and certificate requirements, when so described. Lump charcoal made by old kiln or pit method which provides long air exposure before shipment is exempt from label and placard requirements when certified and marked "No label required" or "No placard required.")
•Charcoal, wood, lump.....	do.....		2,000 pounds.....	do.....	Par. 1833.
Charcoal, wood, screenings.....	do.....		No exemption.....	do.....	Par. 1822 and 1841.
Chlorates, n. o. s.....	Oxi. M.....		25 pounds.....	do.....	
Chloride of phosphorus.....	Cor. L.....		No exemption.....	White.....	Par. 1855.
Chlorides, anhydrous, liquid.....	do.....		do.....	do.....	Do.
Chloride of sulphur.....	do.....		do.....	do.....	Para. 1822, 1851, 1852 and 1855.
•Cleaning fluid (or liquid).....	Inf. L.....	0-80	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
•Coal-tar light oil.....	do.....	0-80	do.....	do.....	Do.
•Coal-tar naphtha.....	do.....	0-80	do.....	do.....	Do.
Collodion.....	do.....	†0	do.....	do.....	Do.
Cologne spirits (alcohol).....	do.....	60	do.....	do.....	Do.
Columbian spirits (alcohol, wood).....	do.....	45	do.....	do.....	Do.

†At or below.

•See paragraph 1807 (e).



Biogas.....	do	.....	do	.....	Red (gas) ..	Pars. 1861 to 1863.
Carbonic acid.....	do	.....	do	.....	Green (gas)	Pars. 1861 and 1862.
Chlorine.....	do	.....	do	.....	do	Do.
Coal gas.....	do	.....	do	.....	Red (gas) ..	Do.
Dental.....	do	.....	do	.....	Green (gas)	Do.
Hydrogen.....	do	.....	do	.....	Red (gas) ..	Pars. 1861 to 1863.
Liquefied petroleum gas.....	do	.....	do	.....	do	Pars. 1824 and 1861 to 1863.
Oxygen.....	do	.....	do	.....	Green (gas)	Pars. 1861 and 1862.
Pintsch.....	do	.....	do	.....	Red (gas) ..	Pars. 1861 to 1863.
Sulphur dioxide.....	do	.....	do	.....	Green (gas)	Pars. 1861 and 1862.
Compressed gases, n. o. s....	do	.....	do	.....	Red or	Pars. 1861 to 1863.
Gas drips (hydrocarbon).....	Inf. L.....	±0	1 gallon.....	green (gas)	Red.....	Pars. 1867 (c), 1822, 1824 to 1827.
Gasoline (see Note 1).....	do	±0	do	do	do	Pars. 1807 (c), 1822, 1824 to 1827.
						made by compressing natural gas or by
						blending liquefied petroleum gas with refin-
						ery gasoline or naphtha may be described
						and shipped as gasoline provided the vapor
						pressure does not exceed 10 pounds per
						square inch.
High wines (alcohol).....	do	60-80	do	do	do	Pars. 1807 (c), 1822, 1824 to 1827.
*Insecticide (vermin exter-	do	0-80	1 gallon.....	do	do	Do.
minator, liquid.						
Lacquer.....	do	0-80	do	do	do	Pars. 1807 (c), 1822, 1824 to 1827. (See Paint.)
Lead,nitrate of, in bags.....	Oxi. M.....	.....	100 pounds.	Yellow.....	Pars. 1822 and 1841. (See Nitrates.)	
			(in one shipment)			
Liquefied petroleum gas.....	Inf. L.....	±0	No exemption.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.	
Matches "Strike Anywhere".	Inf. S.....	.....	do	Yellow.....	Pars. 1822 and 1836.	
Naphtha.....	Inf. L.....	±0	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.	
*Naphtha distillate.....	do	0-80	do	do	Do.	
Nitrates, in bags.....	Oxi. M.....	.....	100 pounds.	Yellow.....	Pars. 1822 and 1841. Nitrates in boxes, kegs or	
			(in one shipment)		barrels are exempt from label and certificate	requirements when properly so described.

±At or below.

\*See paragraph 1807 (e).

NOTE 1.—Automobiles and motor cycles equipped with securely closed acetylene gas cylinders or tanks containing gasoline are exempt from label and certificate requirements.

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

Names of dangerous articles.	Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.— Compressed gas.	Maximum quantity in one outside package which may be shipped with out a label when marked and certified "No label required"	Kind of label required when quantity exceeds the limits prescribed for "No label required."	References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
1	2	3	4	5
Nitrocellulose, wet with solvent.	Inf. L. ....	No exemption .....	Red .....	Must contain not less than 30 per cent by weight of a solvent whose flash point is not lower than 40° F. and must be packed in glass bottles (par. 1824) or in securely closed metal vessels that will stand the drop tests prescribed for metal barrels. (Specification No. 5.)
Nitrocellulose or nitrostarch, wet with 20 per cent water	Inf. S. ....	do .....	Yellow .....	Par. 1834. Dry nitrocellulose and dry nitro-starch are high explosives.
*Oil, gas .....	Inf. L. ....	1 gallon .....	Red .....	Pars. 1807 (c), 1822, 1824 to 1827.
*Oil described as "Oil," or	do .....	do .....	do .....	Do.
"Oil, n. o. s.," or "Petroleum oil,"	do .....	do .....	do .....	See Paint.
n. o. s.	do .....	do .....	do .....	Pars. 1807 (c), 1822, 1824 to 1827. Inflammable
Paint aluminum, bronzing or	do .....	do .....	do .....	paint, varnish, wood filler, or wood stain,
gold.	do .....	do .....	do .....	liquid, in glass or earthenware vessels, or in
*Paint, liquid .....	do .....	do .....	do .....	metal cans, all packed in wooden barrels or

boxes and marked to show compliance with specifications (see par. 1822), are exempt from labels when marked and certified "No label required." Nonflammable paint is not subject to these packing requirements, but must be marked and certified "No label required." Dry paint is exempt from label and certificate requirements when properly so described.

Pentane.....	do	10	½ gallon.....	do	.....	Para. 1807 (c), 1822, 1824 to 1827.
Perchlorate of ammonium.....	Oxl. M.....	.....	25 pounds.....	Yellow.....	.....	Para. 1822 and 1841.
Perchlorate of potash.....	do	.....	do	do	.....	Do.
Potassium permanganate of potash.....	do	.....	do	do	.....	Do.
Petroleum, crude (crude oil).....	Inf. L.....	0-80	1 gallon.....	Red.....	.....	Para. 1807 (c), 1822, 1824 to 1827.
Petroleum naphtha.....	do	10	do	do	.....	Do.
Phosphorus trichloride.....	Cor. L.....	.....	No exemption.....	White.....	.....	Para. 1822 and 1855.
Phosphorus (white or yellow).....	Inf. S.....	.....	do	Yellow.....	.....	Par. 1832.
Picric acid, wet with 10 per cent water.....	do	.....	do	do	.....	Par. 1834.
*Potash, meta. liquid.....	Inf. L.....	0-80	1 gallon.....	Red.....	.....	Para. 1807 (c), 1822, 1824 to 1827.
*Potash, stove, liquid.....	do	0-80	do	do	.....	Do.
Potash, bromate.....	Oxl. M.....	.....	25 pounds.....	Yellow.....	.....	Para. 1822 and 1841.
Potash, chlorate of.....	do	.....	do	do	.....	Do.
Potash, nitrate of, in bags.....	do	.....	do	do	.....	Para. 1822 and 1841.
*Potash described as "Potash" or "Potash, n. o. s.".....	do	.....	25 pounds.....	do	.....	Para. 1822 and 1841.
Potassium, metallic.....	Inf. S.....	.....	No exemption.....	do	.....	Par. 1831.
Potassium sulphide (fused and ground).....	do	.....	do	do	.....	Par. 1835.
Pyroxylin plastic scrap.....	do	.....	do	do	.....	Par. 1839.
Pyroxylin solution.....	Inf. L.....	0-80	1 gallon.....	Red.....	.....	Para. 1807 (c), 1822, 1824 to 1827.
*Rubber scrap, shoddy, regenerated or reclaimed rubber.....	Inf. S.....	.....	10 pounds.....	Yellow.....	.....	Par. 1840.
Salt peter, in bags.....	Oxl. M.....	.....	100 pounds.....	do	.....	Para. 1822 and 1841.
			(in one shipment)			

\*See paragraph 1807 (e).

At or below.

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

1 Name of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	5 References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
Shellac, varnish. Soda, chloride of. Soda, nitrate of, in bags.	Inf. L.... Oxi. M.... do .....	1 gallon. 25 pounds. 100 pounds.	Red..... Yellow.... do .....	See Paint. Pars. 1822 and 1841. Pars. 1822 and 1841. (See Nitrates.)
Soda nitrite of. Sodium, metallic. Sodium, peroxide. Sodium sulphide (fused and ground). Strontia, nitrate of, in bags.	do .....	25 pounds. No exemption. do .....	do .....	Pars. 1822 and 1841. Par. 1831. Pars. 1822 and 1841. Par. 1835.
Sulphur, chloride of. Tin, bichloride, liquid (tetrachloride of). Toluol (toluene). Trinitrotoluol, wet with 10 per cent water.	Cor. L.... do .....	100 pounds. (in one shipment) No exemption. do .....	do .....	Pars. 1822 and 1841. (See Nitrates)
•Varnish. Zinc fine dust.	Inf. L.... Inf. S....	1 gallon. 10 pounds.	White..... do .....	Pars. 1822, 1851, 1852 and 1855. Par. 1855. Pars. 1807 (c), 1822, 1824 to 1827. Par. 1834. See Paint. Par. 1830.

\* See paragraph 1837 (c).

† At or below.

## SECTION II. RULES FOR PACKING.

1821. Dangerous articles for which the yellow and white labels, respectively, are prescribed must not be packed in the same package, unless the bottle containing the corrosive liquid is cushioned by incombustible absorbent material in tightly closed metal containers, as prescribed by paragraph 1851. Cylinders of compressed gases must not be packed with other articles.

1822. (a) The construction of barrels, drums, boxes, cans, carboys, or other containers purchased subsequent to March 31, 1912, and used in shipping dangerous articles other than explosives must conform to specifications approved by the Interstate Commerce Commission that apply; and each container must be stamped, labeled or marked "Complies with I. C. C. Spec'n No. —," or equivalent marking as stated in the specification.

(b) In addition to standing the tests prescribed, the design and construction of packages must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under the ordinary conditions incident to transportation. The results of experience, gained by an examination of damaged or broken packages on arrival at destination, must be reported to and recorded by the Bureau of Explosives, to the end that further use of any particular kind of package shown by experience to be inefficient may be prohibited by the Commission.

(c) Pending approval and promulgation by the Commission of specifications for types of shipping containers other than those for which specifications are published herein, containers may be used which after investigation made by the Bureau of Explosives, or by other competent testing laboratory in the presence of a representative of the Bureau of Explosives, are shown to possess the general efficiency and the protection against leakage of contents afforded by the standard types of corresponding capacity described in the specifications published herein, provided they are labeled or marked to show compliance with this requirement.

(d) Tank cars used for the shipment of dangerous articles other than explosives must comply with Master Car Builders' rules, and a tank car that leaks or one that has any defect which would make leakage during transit probable or that has not been tested and stenciled in compliance with Master Car Builders' rules must not be used for the shipment of any inflammable liquid.

(e) The tanks and their fittings must be examined by the shipper to see that they are in proper condition for loading.

Tanks must be examined for evidence of previous leaks; safety and outlet valves, dome covers and outlet-valve caps must be in proper condition before loading; after loading, tanks must not show any dropping of liquid contents at the seams or rivets, and should such dropping appear cars must be properly repaired; outlet valves must not permit more than a dropping of the liquid with valve caps off, otherwise valve must be reground and repaired. Dome covers and valve caps provided with suitable gaskets, must be properly screwed in place before cars are tendered to the carrier.

(f) Loaded tank cars tendered for shipment must be inspected by the carrier to see that they are not leaking, that the air and hand brakes, journal boxes, trucks and safety appliances are in proper condition for service, and that the car has been tested within limits prescribed by Master Car Builders' rules.

(g) Tests of all tank cars and their safety valves, as made in compliance with Master Car Builders' rules, must be certified by the party making the tests to the owner of the tank car and to the chief inspector, Bureau of Explosives; and this certification must show the initials and number of the tank car, the service for which it is suitable, the date of test, place of test, and by whom made.

#### INFLAMMABLE LIQUIDS—RED LABEL.

1824. (a) All inflammable liquids must be shipped in packages complying with specifications that apply as follows:

(b) In tightly closed metal cans of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11.

(c) In well-stoppered glass or earthenware vessels of not exceeding 1 gallon capacity, cushioned in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11, or in a well-stoppered glass or earthenware vessel of not exceeding 5 gallons capacity, well cushioned in a wooden box and not more than one such vessel in the box. The completed package must comply with swing and drop tests prescribed for boxed carboys by Specification No. 1.

(d) In well-stoppered glass, earthenware or metal vessels of not exceeding 1 pint capacity when flash point is 20° F., or lower, and 1 quart capacity when flash point is above 20° F., cushioned in fiber board or corrugated strawboard containers complying with Specification No. 24.

(e) In wooden kits of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2, or cushioned in wooden barrels or kegs complying with Specification No. 11.

(f) In metal-jacketed cans of not exceeding 10 gallons capacity, complying with Specification No. 23.

(g) In well-stoppered carboys of not exceeding 13 gallons capacity, cushioned in wooden boxes complying with Specification No. 1.

(h) In wooden barrels or kegs complying with Specification No. 10 when the flash point of the liquid is not lower than 20° F., or in wooden barrels or kegs complying with Specification No. 9 when the flash point is lower than 20° F., unless otherwise provided in the tariffs under which shipment moves.

(i) In metal barrels or drums complying with Specification No. 5.

(j) In tank cars complying with Master Car Builders' specifications, provided the vapor tension of the inflammable liquid corresponding to a temperature of 100° F. (90° F. Nov. 1 to Mar. 1) does not exceed 10 pounds per square inch. After May 1, 1915, a tank car must not be used for shipping inflammable liquids with flash point lower than 20° F., unless it has been tested with cold-water pressure of 60 pounds per square inch and stenciled as required by Master Car Builders' rules.

(k) Liquid condensates from natural gas or from casing-head gas of petroleum oil wells whose vapor tension at 100 degrees F. (90 degrees F. November 1st to March 1st) exceeds 10 pounds per square inch, must be described as Liquified Petroleum Gas. In measuring the vapor tension the container of the sample may be vented momentarily at a temperature of 70 degrees F. This product must be shipped in metal drums or barrels which comply with specification No. 5 and have a nominal capacity not exceeding 55 gallons; or in special insulated tank cars approved for this service by the Master Car Builders' Association, provided the vapor tension as above defined does not exceed 15 pounds per square inch. When the vapor tension as above defined exceeds 25 pounds per square inch, cylinders as prescribed for compressed gases (see paragraphs 1861 to 1863, inclusive) must be used.

When the condensate, blended or unblended with other products, has a vapor tension as above defined, not exceeding 10 pounds per square inch, and is shipped as "gasoline" in an ordinary tank car, 60-pound test class, defined in Master Car Builders' Association Specifications for Tank Cars, the safety valves of such a car must be set to operate at 25 pounds per

square inch, with a tolerance of one pound above or below; and the mechanical arrangements for closing the dome cover of this car must either be such as to make it practically impossible to remove the dome cover while the interior of the car is subjected to pressure or suitable vents that will be opened automatically by starting the operation of removing the dome cover must be provided. The shipper must attach securely and conspicuously to the dome and to the dome cover white placards conforming to samples furnished by the Chief Inspector of the Bureau of Explosives, cautioning all railway and refinery employees not to remove the dome cover while interior pressure exists. The presence of these dome placards must be noted on the shipping order, and on the billing accompanying the car. This regulation must be made effective not later than May 15, 1916, at all points where this condensate from natural gas or "casinghead gas" is produced and shipped in a blended or unblended state; and the requirement for construction of dome covers and valve setting at 25 pounds must be made effective not later than January 1, 1917, for all tank car shipments of inflammable liquids with flash points lower than 20 degrees F.

When the "blowing" of safety valves of a car containing inflammable liquids is noted, any available means for cooling the car shell and contents, such as spraying with water, should be utilized; and, if practicable, the car should be moved to an isolated point, to minimize the fire risk. Covering the safety valves with wet cloth, wet blankets or wet gunny sacks will decrease the danger of igniting vapors escaping from a "blowing" valve. The burning of these vapors at the safety valve is not liable to cause an explosion. The valves are designed to permit, in emergencies, the burning in this way of the entire contents of the car.

(1) Carbon bisulphide in interior packages of capacity greater than  $\frac{1}{2}$  gallon must be shipped in metal cans of not less than 28 gauge, boxed, complying with Specification No. 2; or in metal barrels or drums complying with Specification No. 3, such barrels or drums after January 1, 1916, not to exceed 55 gallons capacity. Carbon bisulphide may also be shipped in tank cars complying with paragraph 1824 (j).

1825. (a) Packages containing inflammable liquids must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers, due to increase of temperature during transit. In all such packages, this vacant space must not be less than 2 per cent of the total capacity of the container. In tank cars the vacant space must not be less than 2 per cent of the total capacity of the tank,

(b) In packages containing alcohol, cologne spirits, high wines or other distilled spirits, the vacant interior space or allowance for wantage or ullage must conform to the United States Internal Revenue Regulations.

1827. Wooden-jacketed cans and wooden kits must not be used for the shipment of inflammable liquids, except as inside containers as provided by Specification No. 2 or 11.

	Item	C.L.
21	Petroleum or Petroleum Products	
22	Belt Oil,	
23	Benzine,	
24	Crude Oil,	
25	Cordage Oil,	
26	Felt Oil,	
27	Floor Oil,	
28	Fuel Oil,	
29	Gas Oil,	
30	Gas, Liquefied, vapor tension at 100 degrees F., not exceeding 25 lbs. per square inch,	
31	Gasoline,	
32	Harness Oil,	
33	Leather Oil,	
34	Lubricating Oil,	
35	Miners' Oil,	
36	Miners' Oil Stock,	
37	Naphtha,	
38	Naphtha Distillate,	
39	Neatsfoot Oil,	
40	Paint Oil,	
41	Putty Oil,	
42	Refined Oil Distillate,	
43	Refined Oil, illuminating or burning,	

- 44 Soap Oil,
- 45 Tanners' Oil,
- 46 Tobacco Oil,
- 47 Transformer Oil,
- 48 Wool Oil, or
- 49 Oil, not otherwise indexed by name, \* \* \* In tank cars,  
C. L., weight per gallon 6.6 lbs., subject to rule 32.. 5

#### UNITED STATES RAILROAD ADMINISTRATION

W. G. McADOO, Director General of Railroads.

Supplement No. 5 to C. R. C. No. 11 (Cancels Supplement No. 3 and Special Supplement No. 4) (Supplements Nos. 1 and 5 contain all changes)

Supplement No. 5 to S. B. No. 1 (Cancels Supplement No. 3 and Special Supplement No. 4) (Supplements Nos. 1 and 5 contain all changes)

*Supplement No. 5 to I. C. C. No. 13* (Cancels Supplement No. 3 and Special Supplement No. 4) (Supplements Nos. 1 and 5 contain all changes)

Supplement No. 5 to P. S. C. Mo. No. 4; P. U. C. Colo. No. 4; P. S. C. Wyoming No. 3; P. U. C. Idaho No. 3; Illinois P. U. C. No. 2; C. C. Oklahoma No. 2; S. C. C. New Mexico No. 2; Michigan R. C. No. 1; P. U. C. Utah No. 1 (Cancels Supplement No. 3 and Special Supplement No. 4) (Supplements Nos. 1 and 5 contain all changes)

#### THE WESTERN CLASSIFICATION No. 55

*Supplement No. 5.*

(Cancels Supplement No. 3 and Special Supplement No. 4)  
(Supplements Nos. 1 and 5 contain all changes)

"Departure from the terms of Commission's tariff regulations is authorized under special permission of the Interstate Commerce Commission, No. 47293, of August 16, 1918."

"Section 1, item 1, page 8, of this supplement is filed on one day's notice under Special Permission of the Interstate Commerce Commission No. 47309 of August 20, 1918; also published by the Director General of Railroads and filed on one day's notice with the Interstate Commerce Commission under Freight Rate Authority No. 418, of the Director, Division of Traffic, United States Railroad Administration, dated July 31, 1918."

"Section 2, item 1, page 8, of this supplement is filed on one day's notice under Special Permission of the Interstate Commerce Commission No. 47242 of July 31, 1918; also published for the Director General of Railroads and filed on one day's notice with the Interstate Commerce Commission under Freight Rate Authority No. 153, of the Director, Division of Traffic, United States Railroad Administration, dated July 16, 1918."

"Item 2, page 8, of this supplement is filed on one day's notice under Special Permission of the Interstate Commerce Commission No. 47259 of August 6, 1918, also published for the Director General of Railroads and filed on one day's notice with the Interstate Commerce Commission under Freight Rate Authority No. 306, of the Director, Division of Traffic, United States Railroad Administration, dated July 22, 1918."

"Item 1, page 24, of this supplement issued in compliance with Order of Interstate Commerce Commission in Case No. 9371."

Applying on Freight Traffic covered by Tariffs issued subject thereto.

Issued August 24, 1918. *Effective August 29, 1918* (Except as noted in individual items)

Issued and filed with the following Commissions by R. C. Fyfe, Agent for the Individual Carriers shown herein: Interstate Commerce Commission, Board of Railway Commissioners for Canada, United States Shipping Board, Public Service Commission of Missouri, Public Utilities Commission of Colorado, Public Service Commission of Wyoming, Public Utilities Commission of Idaho, Illinois Public Utilities Commission, Corporation Commission of Oklahoma, State Corporation Commission of New Mexico, Michigan Railroad Commission, Public Utilities Commission of Utah.

#### THE WESTERN CLASSIFICATION COMMITTEE

W. E. PRENDERGAST, H. C. BUSH, R. C. FYFE,  
Chairman, Transportation Building, Chicago.

(Stamped:) Received; Interstate Commerce Commission; 52847; Aug 24 1918; Division of Tariffs.

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*Supplement No. 5.*

INTERSTATE COMMERCE COMMISSION REGULA-  
TIONS FOR THE TRANSPORTATION OF DAN-  
GEROUS ARTICLES OTHER THAN EX-  
PLOSIVES BY FREIGHT.

Prescribed under act of March 4, 1909, and section 15 of the act to regulate commerce, as amended June 18, 1910. Revision formulated and published July 2, 1914, effective October 1, 1914, and superseding regulations published January 1, 1912. Further revision formulated and published July 15, 1918, effective September 1, 1918, superseding the regulations published July 2, 1914.

GENERAL NOTICE.

1701. Special precautions are necessary in preparing for shipment packages of dangerous articles other than explosives, and in handling these packages during transit. Any failure of a shipper, or of a carrier, to perform the duties imposed upon him in this respect may be the actual or a contributory cause not only of destructive fires but of disastrous explosions, since large quantities of explosives are transported frequently through thickly populated districts and in trains containing cars loaded with other dangerous articles.

1702. Sections 235 and 236 of the act of March 4, 1909, require the shipper of dangerous articles to describe and mark his packages properly and to inform the agent of the carrier of the true character of their contents. Heavy penalties are provided for the shipper who knowingly solicits the transportation of dangerous articles without complying with these requirements, as well as for the carrier that knowingly transports them.

1703. To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation by land in interstate commerce of dangerous articles other than explosives, the following regulations are prescribed to define these articles for freight transportation purposes, to state the precautions that must be observed by the shipper in preparing them for shipment, and by the carrier in handling them while in transit. It is the duty of each such carrier and shipper to make the prescribed regulations effective and to thoroughly instruct their employees in relation thereto.

1704. These regulations apply to all shipments of dangerous articles other than explosives, including carriers' material and supplies.

1705. Specifications as to containers, methods of packing for shipment, etc., will be considered and prescribed from time to time. Orders prescribing such specifications will be given effective dates as conditions and investigations may appear to warrant.

1706. The Bureau for the Safe Transportation of Explosives and other Dangerous Articles, hereinafter called Bureau of Explosives, organized by the railways under the auspices of the American Railway Association, is an efficient bureau in charge of an expert chief inspector. This bureau will make inspections and conduct investigations and will confer with manufacturers and shippers with a view to determining what specifications and regulations will within reasonable limits afford the highest degree of safety in packing and preparing these dangerous articles for shipment and in transporting the same. The Commission will seek to avail itself of the expert knowledge thus developed and, in formulating amendments to these regulations or specifications supplemental thereto, while not bound thereby, will give due weight to such expert opinions.

### GENERAL RULES.

1711. Carriers that are subject to the act to regulate commerce must not receive shipments of articles defined as dangerous by these regulations when the shipments are not packed, marked, labeled, described, and certified as prescribed herein. The method of manufacture and packing of articles defined as dangerous by these regulations, so far as it affects safe transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives.

1712. All shipments of articles subject to these regulations offered for transportation in interstate commerce must be properly described by the shipper in his shipping order and bill of lading under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

The same description of contents must be marked plainly on the outside of each package. Tank cars must bear thereon a card showing proper name of contents.

In less-than-carload shipments each package must be

marked also to show plainly the name and address of the consignee. This address, the name of contents, and the required label or "no label required" marking, should be as near together as practicable.

1713. All shipments of articles defined as dangerous by these regulations, and for which detailed instructions for packing are not given herein, must be securely packed in containers strong enough to stand without rupture or leakage of contents all ordinary shocks incident to reasonably careful handling during transit. It is the duty of shippers, where leakage from their shipping containers is known to be a probable source of fire or material damage to other freight, to exercise special care in constructing shipping containers for such articles, even though their names do not appear in the list of dangerous articles, paragraph 1807.

1714. Carriers must forward shipments of dangerous articles other than explosives promptly and within 48 hours after acceptance at originating point or receipt at transfer station, or at interchange point, and consignees must remove such shipments from the carrier's property within 48 hours after notice of arrival at destination, Sundays and holidays not included.

1715. (a) *Serious violations of these regulations*, such as the discovery of leaking or broken packages of dangerous articles, and *accidents or fires* in connection with the transportation or storage on carrier's property of dangerous articles, must be reported promptly by the carrier to the chief inspector of the Bureau of Explosives, 30 Vesey Street, New York City.

(b) Consignees should report promptly to the chief inspector, Bureau of Explosives, all instances of broken or defective containers in shipments of dangerous articles received by them.

1716. Containers that have been previously used for dangerous articles other than explosives, must have the old marks and labels removed before being used for the shipment of other articles.

## SECTION 1. INFORMATION AND DEFINITIONS.

1800. For transportation purposes dangerous articles other than explosives are divided into the following groups:

1. *Forbidden articles.*
2. *Acceptable articles.*

**GROUP 1.—FORBIDDEN ARTICLES.**

1801. The following are *forbidden articles*:

(a) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(b) Cylinders containing gases capable of combining chemically.

(c) Packages containing dangerous articles in a leaking condition or in such an insecure condition as to make leakage probable during transit.

(d) Rags or cotton waste oily with more than 5 per cent of vegetable or animal oil, or wet rags, or wet textile waste, or wet paper stock.

(e) Charcoal screenings from wet charcoal, or wet screenings, or screenings that have been wet. (See par. 1833 (c).)

(f) Dangerous articles not properly packed, marked, labeled, described, and certified.

(g) Iron sponge that has not been properly oxidized during manufacture; and spent oxide or spent iron mass except when loaded in open steel cars.

**GROUP 2—ACCEPTABLE ARTICLES.****Definitions.***Inflammable Liquids—Red Label*

1802. This group includes any liquid or liquid mixture that gives off inflammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 80° F.

*Inflammable Solids—Yellow Label*

1803. This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

*Oxidizing Materials—Yellow Label*

1804. This group includes all substances, such as chlorates, permanganates, peroxides, and nitrates, that yield oxygen readily to stimulate the combustion of organic matter.

*Corrosive Liquids—White Label*

1805. This group includes the strong mineral acids (in strength greater than one-half <sup>1</sup> concentrated, i. e., 47 per cent sulphuric, 34 per cent nitric, 20 per cent hydrochloric) and other strongly corrosive liquids that are liable to cause fires when mixed with chemicals or with organic matter, or are liable in case of leakage from their shipping containers, to damage other freight materially.

*Compressed Gases—Red or Green (Gas) Label*

1806. This group includes all inflammable or noninflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding seven-eighths inch outside diameter and of not more than 4 fluid ounces water capacity.

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

1807. (a) The following list shows the names of well-known articles in general use, other than explosives, that are dangerous; the kind of label required on outside packages; the quantities that may be shipped in one outside package without a label when certified and marked "No label required," and the label exemptions on account of specified packing. (See column 5 of list.)

(b) When a shipment described under a name not in the following list is defined as a dangerous one by paragraphs 1802 to 1806, inclusive, the shipper must inform the carrier of the fact by use of the proper label prescribed herein, and the shipping order must show the certificate prescribed by paragraph 1867. The maximum quantity of any such article shipped in one outside package without label, when certified and marked, "No label required," except as specified herein, must not exceed the limit prescribed by column 3 of the list for dangerous articles of similar flash point or characteristics.

(c) Inflammable liquids as defined by paragraph 1802, in securely closed glass, earthenware, or metal containers of not exceeding 1 pint capacity each (ether 1 1/10 pounds), when flash point is 20° F., or lower, and of not exceeding one quart capacity when flash point is above 20° F., packed and cushioned in fiber board or corrugated strawboard containers, wooden boxes, kegs, or barrels, complying with shipping con-

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NOTE—Hand fire extinguishers containing non-liquefied gas for the purpose of expelling fire-extinguishing contents are excepted.

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(1) For express transportation, greater than one-fourth concentrated.

tainer specifications that apply, may be shipped without labels when certified and marked "No label required."

(d) A shipment described under a definite and proper name not in the following list and on a shipping order with no notation as to labels applied and no shipper's certificate, will be assumed by the carrier in the absence of knowledge to the contrary, to be not dangerous under these regulations.

(e) When articles described under names in the following list marked with (\*) are not dangerous under the regulations, the shipper must, unless otherwise provided in said list, state on his shipping order, as a part of the description of such article, for less than carloads, "No label required," and for carloads, state on his shipping order "No placard required," and must also furnish the certificate prescribed by paragraph 1867 and mark the packages "No label required."

(f) When several dangerous articles are placed in one outside package without violating these regulations, labels must be applied, when the combined quantity of the articles of any one group exceeds the lowest limit prescribed by column 3 for any of the articles of that group that are included.

(g) When dangerous articles requiring the red label are shipped in the same outside package with dangerous articles requiring yellow or white labels, the outside package must be labeled with red label only.

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

1	2	3	4	5
Names of dangerous articles.	Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limits prescribed for "No label required."	References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
*Acetate, amyl.....	Inf. L.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Acetate, ethyl.....	do.....	do.....	do.....	Do.
Acetate, methyl.....	do.....	do.....	do.....	Do.
Acetone.....	do.....	do.....	do.....	Do.
*Acid hydrochloric (muriatic)	Col. L.....	5 pints (6 pounds)...	White.....	Pars. 1805, 1851, 1852, and 1856.
Acid hydrofluoric.....	do.....	do.....	do.....	Pars. 1805, 1851, 1852, and 1854.
Acid hydrofluosilicic.....	do.....	do.....	do.....	Do.
Acid, nitrating (mixed acid)	do.....	No exemption.....	do.....	Mixed nitric and sulphuric acids, par. 1855.
*Acid, nitric.....	do.....	do.....	do.....	Pars. 1805, 1851, 1852, and 1857.
*Acid, sulphuric (oil of vitriol)	do.....	5 pints (9 pounds)...	do.....	Pars. 1805, 1851, 1852, and 1855.
Alcohol.....	Inf. L.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Alcohol, denatured.....	do.....	do.....	do.....	Do.
Alcohol, wood.....	do.....	do.....	do.....	Do.
Ammonium perchlorate.....	Oxi. M.....	25 pounds.....	Yellow.....	Pars. 1822 and 1841.
Barium, chlorate of.....	do.....	do.....	do.....	Do.
Barium, nitrate of, in bags...	Oxi. M.....	100 pounds (in one shipment).....	do.....	Pars. 1822 and 1841. (See Nitrates.)
Barium peroxide (binonide, dioxide).....	do.....	25 pounds.....	do.....	Pars. 1822 and 1841.
Benzol (benzene).....	Inf. L.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Benzine.....	do.....	do.....	do.....	Do.

Bromine.....	Cor. L.....	.....	5 pints.....	White.....	Par. 1853.
Bronzing liquid.....	Inf. L.....	0-70.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Burnt cotton.....	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1837.
Calcium phosphide.....	do.....	.....	do.....	do.....	Par. 1835.
Carbon bisulphide.....	Inf. L.....	†0.....	5 pounds.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Casinghead gasoline.....	do.....	†0.....	1 gallon.....	do.....	Do.
Casinghead naphtha.....	do.....	†0.....	do.....	do.....	Do.
Celluloid scrap.....	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1839.
Cement, leather.....	Inf. L.....	†0.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Cement, liquid, n. o. s.....	do.....	0-80.....	do.....	do.....	Do.
*Cement, roofing (liquid).....	do.....	0-80.....	do.....	do.....	Do.
Cement, rubber.....	do.....	†0.....	do.....	do.....	Do.
Charcoal, wood, ground, crushed, granulated or pulverized.....	Inf. S.....	.....	100 pounds..... (in one shipment).	Yellow.....	(Par. 1833, Charcoal "in bottles," "in boxes," "in barrels," or "in tablets," "case-hardening charcoal," "animal charcoal," or "bone char- coal" is exempt from label and certificate requirements, when so described. Lump charcoal made by old kiln or pit method which provides long air exposure before shipment is exempt from label and placard requirements when certified and marked "No label required" or "No placard re- quired." Par. 1833. Pars. 1822 and 1841.
*Charcoal, wood, lump.....	do.....	.....	2,000 pounds..... (in one shipment).	do.....	
Charcoal, wood, screenings.....	do.....	.....	No exemption.....	do.....	
Chlorates, n. o. s.....	Oxi. M.....	.....	25 pounds..... (in one shipment).	do.....	
Chloride of phosphorus.....	Cor. L.....	.....	No exemption.....	White.....	Par. 1855 (b).
Chlorides, anhydrous, liquid.....	do.....	.....	do.....	do.....	Do.
Chloride of sulphur.....	do.....	.....	do.....	do.....	Pars. 1822, 1851, 1852, and 1855.
Chromic acid.....	Oxi. M.....	.....	25 pounds (in one shipment).....	Yellow.....	Pars. 1822 and 1841 (e).
*Cleaning fluid (or liquid).....	Inf. L.....	0-80.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Coal-tar light oil.....	do.....	0-80.....	do.....	do.....	Do.
*Coal-tar oil.....	do.....	0-80.....	do.....	do.....	Do.
*Coal-tar naphtha.....	do.....	0-80.....	do.....	do.....	Do.
Cobalt resinates, precipitated.....	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1840 (b).
	Inf. L.....	†0.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.

\*See paragraph 1807 (e).

†At or below.

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

Names of dangerous articles.	1		Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid Comp. G. — Compressed gas.	2	3	4	5
Collodion.....	Inf. L.....	°F. 60	1 gallon.....	Red.....	Pars. 1807 (c), 1823, 1824 to 1827.		
Cologne spirits (alcohol).....	do .....	60	do .....	do .....	Do.		
Columbian spirits (alcohol, wood).....	do .....	45	do .....	do .....	Do.		
*Compounds, paint or varnish removing, liquid.	do .....	0-80	do .....	do .....	Pars. 1807 (c), 1822, 1824 to 1827.		
*Compounds, polishing, liquid	do .....	0-80	do .....	do .....	Do.		
*Compounds, type cleansing, liquid.	do .....	0-80	do .....	do .....	Do.		
*Compounds, vulcanizing.....	do .....	0-80	do .....	do .....	Do.		
*Compounds, vulcanizing.....	Cor. L.....	.....	do .....	White.....	Pars. 1822, 1851, 1852, and 1855.		
*Disillate.....	Inf. L.....	0-80	do .....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.		
*Dressing, leather.....	do .....	0-80	do .....	do .....	Do.		
*Driers, paint or japan.....	do .....	0-80	do .....	do .....	Do.		
*Electrolyte.....	Cor. L.....	.....	5 pints (9 pounds)...	White.....	Pars. 1805, 1851, 1852, and 1855.		
*Eradicators, paint or grease, liquid.	Inf. L.....	0-80	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.		
Ether.....	do .....	70	5 pounds.....	do .....	Do.		
*Extracts, liquid (flavoring)...	do .....	20-80	1 gallon.....	do .....	Pars. 1807 (c), 1822, 1824 to 1827. Bark, tanner's medicinal and wood extracts, are ex-		

empt from label and certificate requirements when properly so described.

Pars. 1861 to 1863.

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Pars. 1824 (k) and 1861 to 1863.

Pars. 1861 to 1863.

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# Gases, compressed:

Acetylene (see Note 1).....

Argon.....

Air, compressed.....

Anhydrous ammonia.....

Blaugas.....

Carbonic acid.....

Chlorine.....

Coal gas.....

Dental.....

Hydrocarbon.....

Hydrogen.....

Liquefied petroleum gas.....

Nitrogen.....

Oxygen.....

Pinetich.....

Sulphur dioxide.....

Compressed gases, n. o. s.....

Gas drips (hydrocarbon).....

Gasoline (see Note 1).....

Inf. L.....

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## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

1 Names of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked for "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	5 References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
Liquefied petroleum gas.... Matches "Strike Anywhere". Naphtha..... Naphtha distillate..... Nitrates, in bags.....	°F. Inf. L..... 70 Inf. S..... Inf. L..... 70 do..... 0-80 Oxi. M.....	No exemption..... do..... 1 gallon..... do..... 100 pounds..... (in one shipment).	Red..... Yellow..... Red..... do..... Yellow.....	Pars. 1807 (c), 1822, 1824 to 1827. Pars. 1822 and 1836. Pars. 1807 (c), 1822, 1824 to 1827. Do. Pars. 1822 and 1841. Nitrates in boxes, kegs, or barrels are exempt from label and certificate requirements when properly so described.
Nitrocellulose, wet with solvent.	Inf. L..... 40	No exemption.....	Red.....	Must contain not less than 30 per cent by weight of a solvent whose flash point is not lower than 40° F. and must be packed in glass bottles (par. 1824) or in securely closed metal vessels that will stand the drop tests prescribed for metal barrels. (Specification No. 5.)
Nitrocellulose or nitrostarch, wet with 20 per cent water • Oil, gas..... • Oil described as "Oil," or "Oil, n. o. s.," or "Petrole-	Inf. S..... Inf. L..... 0-80 do..... 0-80	do..... do..... 1 gallon..... do.....	Yellow..... Red..... do.....	Par. 1834. Dry nitrocellulose and dry nitro-starch are high explosives. Pars. 1807 (c), 1822, 1824 to 1827. Do.



## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

Names of dangerous articles.	1		2		3		4		5	
	Group names and flash points—		Kind of label required—		Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."		Kind of label required when quantity exceeds the limits prescribed for "No label required."		References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.	
	Inf. L.—Inflammable liquid.	Inf. S.—Inflammable solid.	Oxi. M.—Oxidizing material.	Cor. L.—Corrosive liquid.	Comp. G.—Compressed gas.					
Potash, nitrate of.....	Oxi. M.....	0 N.....	25 pounds.....	Yellow.....	Pars. 1822 and 1841					
Potash described as "Potash," or "Potash, n. o. s.".....	do.....	.....	25 pounds.....	do.....	Pars. 1822 and 1841.					
Potassium, metallic.....	Inf. S.....	.....	No exemption.....	do.....	Par. 1831.					
Potassium sulphide (fused, chipped or concentrated).....	do.....	.....	do.....	do.....	Par. 1835.					
Pyroxylin plastic scrap.....	do.....	.....	do.....	do.....	Par. 1839.					
Pyroxylin solution.....	Inf. L.....	0-80.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.					
Pyroxylin solvent n. o. s.....	do.....	0-80.....	do.....	do.....	Do.					
Resinates, precipitated of cobalt.....	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1840 (b).					
Rubber scrap, shoddy, regenerated or reclaimed rubber.....	do.....	.....	10 pounds.....	do.....	Par. 1840. Rubber scrap not ground is exempt from label and certificate requirements, when properly so described.					
Saltpeter, in bags.....	Oxi. M.....	.....	100 pounds.....	do.....	Pars. 1822 and 1841.					
Shellac, varnish.....	Inf. L.....	40-70.....	1 gallon.....	Red.....	See Paint.					
Soda, chlorate of.....	Oxi. M.....	.....	25 pounds.....	Yellow.....	Pars. 1822 and 1841.					
Soda, nitrate of, in bags.....	do.....	.....	100 pounds.....	do.....	Pars. 1822 and 1841. (See Nitrates.)					
Soda, nitrite of.....	do.....	.....	(in one shipment)	do.....						
Sodium, metallic.....	Inf. S.....	.....	25 pounds.....	do.....	Pars. 1822 and 1841.					

Sodium, peroxide.....	Oxi. M.....	.....	No exemption.....	Yellow.....	Pars. 1822 and 1841.
*Sodium sulphide (fused, chipped, or concentrated)	Inf. S.....	.....	do .....	do .....	Par. 1835.
*Solvent, gum or pyroxylin, n. o. s.	Inf. L.....	0-80	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Strontia, nitrate of, in bags..	Oxi. M.....	.....	100 pounds.....	Yellow.....	Pars. 1822 and 1841. (See Nitrates.)
Sulphur, chloride of.....	Cor. L.....	.....	(in one shipment)	White.....	Pars. 1822, 1852 and 1855.
Tetra-nitroaniline, wet with 20 per cent water.	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1834.
Tetra-nitromethylaniline, wet with 20 per cent water.	do .....	.....	do .....	do .....	Do.
Thn, bichloride, liquid (te- trachloride of).	Cor. L.....	.....	do .....	do .....	Par. 1855.
Toluol (toluene).....	Inf. L.....	55	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Trinitrotoluol, wet with 10 per cent water.	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1834.
*Varnish.....	Inf. L.....	0-80	1 gallon.....	Red.....	See Paint.
Zinc flue dust.....	Inf. S.....	.....	10 pounds.....	Yellow.....	Par. 1830.

At or below.

\*See paragraph 1807 (e).

## SECTION 2

## RULES FOR PACKING.

1821. Dangerous articles for which the yellow and white labels, respectively, are prescribed must not be packed in the same package, unless the bottle containing the corrosive liquid is cushioned by incombustible absorbent material in tightly closed metal containers, as prescribed by paragraph 1851. Cylinders of compressed gases must not be packed with other articles.

1822. (a) Barrels, drums, cylinders, boxes, cans, carboys, and other containers used hereafter for the shipment of dangerous articles other than explosives, must be made in accordance with approved specifications that apply and must be properly marked to show compliance with those specifications.

Such containers manufactured and used hereafter must be made in accordance with the specifications that apply as prescribed herein.

Such containers manufactured before the effective date of the specifications prescribed herein may be used if they were made in accordance with specifications previously approved.

Provided, that cylinders manufactured previous to the date on which specifications therefor were first made effective may be used if they comply with the requirements of paragraph 1861 of these regulations. Provided further, that carboys and metal barrels or drums manufactured and purchased prior to the date on which specifications were first made effective, may be used if they are in good condition and afford a package as secure as packages constructed under corresponding specifications.

(b) In addition to standing the tests prescribed, the design and construction of packages must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under the ordinary conditions incident to transportation. The results of experience, gained by an examination of damaged or broken packages on arrival at destination, must be reported to and recorded by the Bureau of Explosives, to the end that further use of any particular kind of package shown by experience to be inefficient may be prohibited by the Commission.

(c) Pending approval and promulgation by the Commission of specifications for types of shipping containers other than those for which specifications are published herein, con-

tainers may be used which after investigation made by the Bureau of Explosives, or by other competent testing laboratory in the presence of a representative of the Bureau of Explosives, are shown to possess the general efficiency and the protection against leakage of contents afforded by the standard types of corresponding capacity described in the specifications published herein, provided they are labeled or marked to show compliance with this requirement.

(d) Tank cars used for the shipment of dangerous articles other than explosives must comply with Master Car Builders' specifications, and a tank car that leaks or one that has any defect which would make leakage during transit probable or that has not been tested and stenciled in compliance with Master Car Builders' specifications must not be used for the shipment of any inflammable liquid.

(e) The tanks and their fittings must be examined by the shipper to see that they are in proper condition for loading. Tanks must be examined for evidence of previous leaks; safety and outlet valves, dome covers, and outlet-valve caps must be in proper condition before loading; tanks must be loaded with outlet valve caps off; after loading, tanks must not show any dropping of liquid contents at the seams or rivets, and should such dropping appear cars must be properly repaired by calking; outlet valves must not permit more than a dropping of the liquid with valve caps off, otherwise valve must be reground and repaired. Dome covers and valve caps provided with suitable gaskets must be properly screwed in place before cars are tendered to the carrier.

(f) Loaded tank cars tendered for shipment must be inspected by the carrier to see that they are not leaking; that the air and hand brakes, journal boxes, trucks, and safety appliances are in proper condition for service; and that the car has been tested within limits prescribed by Master Car Builders' specifications.

(g) Tests of all tank cars and their safety valves, as made in compliance with Master Car Builders' specifications, must be certified by the party making the tests to the owner of the tank car and to the chief inspector, Bureau of Explosives, and this certification must show the initials and number of the tank car, the service for which it is suitable, the date of test, place of test, and by whom made.

#### *Inflammable Liquids—Red Label*

1824. (a) All inflammable liquids must be shipped in packages complying with specifications that apply, as follows:

(b) In tightly closed metal cans of not exceeding 10 gal-

lons capacity, packed in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11.

(c) In well-stoppered glass or earthenware vessels of not exceeding 1 gallon capacity, cushioned in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11, or in a well-stoppered glass or earthenware vessel of not exceeding 5 gallons capacity, well cushioned in a wooden box and not more than one such vessel in the box. The completed package must comply with swing and drop tests prescribed for boxed carboys by Specification No. 1.

(d) In well-stoppered glass, earthenware, or metal vessels of not exceeding 1 pint capacity when flash point is 20° F., or lower, and 1 quart capacity when flash point is above 20° F., cushioned in fiber board or corrugated strawboard containers complying with Specification No. 24.

(e) In wooden kits of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2, or cushioned in wooden barrels or kegs complying with Specification No. 11.

(f) In metal-jacketed cans of not exceeding 10 gallons capacity, complying with Specification No. 23.

(g) In well-stoppered carboys of not exceeding 13 gallons capacity, cushioned in wooden boxes complying with Specification No. 1.

(h) In wooden barrels or kegs complying with Specification No. 10 when the flash point of the liquid is not lower than 20° F., or in wooden barrels or kegs complying with Specification No. 9 when the flash point is lower than 20° F., unless otherwise provided in the tariffs under which shipment moves.

(i) In metal barrels or drums complying with Specification No. 5.

(j) In tank cars complying with Master Car Builders' specifications provided the vapor tension of the inflammable liquid corresponding to a temperature of 100° F. does not exceed 10 pounds per square inch. A tank car must not be used for shipping inflammable liquids with flash point lower than 20° F., unless it has been tested with cold-water pressure of 60 pounds per square inch and stenciled as required by Master Car Builders' specifications, and is equipped with safety valves set to operate at 25 pounds per square inch, and with mechanical arrangement for closing dome cover as specified in paragraph 1824 (k).

(k) Liquid condensates from natural gas or from casing head gas of oil wells, made either by the compression or absorption process, alone or blended with other petroleum products, must be described as Liquefied Petroleum Gas when the vapor pressure<sup>1</sup> at 100° F. (90° F. November 1 to March 1) exceeds 10 pounds per square inch.

When the liquid condensate, alone or blended with other petroleum products, has a vapor pressure not exceeding 10 pounds per square inch, it must be described and shipped as Gasoline, Casing head Gasoline, or Casing head Naphtha.

Liquefied petroleum gas of vapor pressure exceeding 10 pounds per square inch and not exceeding 15 pounds per square inch, from April 1 to October 1 and 20 pounds per square inch from October 1 to April 1, must be shipped in metal drums or barrels which comply with Shipping Container Specification No. 5; or in special insulated tank cars approved for this service by the Master Car Builders' Association.

Liquefied petroleum gas of vapor pressure exceeding 15 or 20 pounds per square inch as provided herein, and not exceeding 25 pounds per square inch, must be shipped only in metal drums or barrels which comply with Shipping Container Specification No. 5.

Liquefied petroleum gas of vapor pressure exceeding 25 pounds per square inch must be shipped in cylinders as prescribed for compressed gases (see pars. 1861 to 1863, inclusive).

When the liquid condensate, alone or blended with other petroleum products, has a vapor pressure not exceeding 10 pounds per square inch it must be described as Gasoline or Casing-head Gasoline or Casing-head Naphtha and must be shipped in metal drums or barrels complying with Specification No. 5; or in ordinary tank cars, 60 pounds test class equipped with mechanical arrangement for closing of dome covers as specified in Master Car Builders' specifications for tank cars.

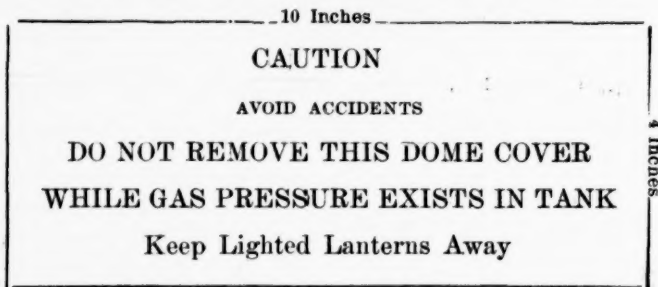
Every tank car containing liquid condensates, either blended or unblended, including liquefied petroleum gas, as defined herein, must have safety valves set to operate at 25 pounds per square inch with a tolerance of 3 pounds above or below, and the mechanical arrangements for closing the dome covers of such cars must either be such as to make it practically impossible to remove the dome cover while the interior

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(1) In measuring the vapor pressure the container may be vented momentarily at a temperature of 70° F.

of the car is subjected to pressure; or suitable vents that will be opened automatically by starting the operation of removing the dome cover must be provided:

The shipper must attach securely and conspicuously to the dome and dome cover three special white dome placards measuring 4x10 inches, bearing the following wording:



One placard must be attached to each side of the dome and one placard must be attached to the dome cover. The presence of these special dome placards must be noted on the shipping order by the shipper and by the carrier on the billing accompanying the car. Placards must conform to samples furnished by the Chief Inspector of the Bureau of Explosives.

(1) Carbon bisulphide in interior packages of capacity greater than one-half gallon must be shipped in metal cans of not less than 28 gauge, boxed, complying with Specification No. 2; or in metal barrels or drums complying with Specification No. 5, such barrels or drums not to exceed 55 gallons capacity. Carbon bisulphide may also be shipped in tank cars complying with paragraph 1824 (j).

1825. (a) Packages containing inflammable liquids must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers, due to increase of temperature during transit. In all such packages this vacant space must not be less than 2 per cent of the total capacity of the container. In tank cars the vacant space must not be less than 2 per cent<sup>1</sup> of the total capacity of the tank, i. e., the shell and dome capacity, combined. If the dome of tank cars does not provide this 2 per cent, sufficient vacant space must be left in the shell of the tank to make up the difference.

(b) In packages containing alcohol, cologne spirits, high wines, or other distilled spirits of 150 proof or over the vacant interior space or allowance for wantage or ullage must be the

maximum permitted by the United States Internal Revenue Regulations.

1826. Interior packages containing 1 quart or more of an inflammable liquid must be packed with their filling holes up and the top of the outside package must be plainly marked "THIS SIDE UP."

1827. Wooden-jacketed cans and wooden kits must not be used for the shipment of inflammable liquids, except as inside containers as provided by Specification No. 2 or 11.

(1) An outage of 2 per cent is frequently insufficient for light petroleum products, owing to the fact that they expand more than heavier petroleum products when the temperature increases, and this rate of expansion varies with the specific gravity of the material. It is recommended that when tank cars are loaded with gasoline, casing-head gasoline or casing-head naphtha (see Par. 1824 (k)) the outage in tank shall not be less than the following:

Temperature of product when loaded.	Minimum outage required when gravity is—		
	50-60° B. Per cent.	60-70° B. Per cent.	70-80° B. Per cent.
0- 60° F.....	3.2	3.5	4.1
61- 70° F.....	2.5	2.8	3.3
71- 80° F.....	2.0	2.1	2.4
81-100° F.....	2.0	2.0	2.0

### Government's Exhibit 45.

Only three supplements to this Classification will be in effect at any time.

P. S. C.-Mo. No. 39, of F. A. Leland, Agent (Cancels P. S. C.-Mo. No. 14) C. R. C. No. 492 of Eugene Morris, Agent (Cancels C. R. C. No. 386) Ohio No. 537 of Eugene Morris, Agent (Cancels R. C. O. No. 372). *I. C. C. No. 1137.* Cancels I. C. C. No. 1026 F. A. Leland, Agent. I. C. C. No. 588 Cancels I. C. C. No. 442 Eugene Morris, Agent.

### SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES--CIRCULAR NO. 1-G

(Cancels Southwestern Lines' Classifications Exceptions and Rules-Circular No. 1-F)

(For Individual Lines' Tariff Numbers, Current and Canceled, See Page 2 and 3)

Containing Exceptions to Western Classification No. 53 (R. S. Fyfe's I. C. C. No. 11, P. S. C.-Mo. No. 2) or re-issues

thereof) and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex., (see item No. 18, or re-issues thereof) and moving under tariffs which are specifically made subject hereto.

Note.—Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section — of this tariff make a lower charge on any shipment than the rates in section — of this tariff, the rates in section — will be applied."

The ratings named in this Classification are subject to the conditions of the carriers' bills of lading, and (unless otherwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 53 (R. C. Fyfe's I. C. C. No. 11, P. S. C.-Mo. No. 2), or re-issue thereof.

This Classification, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued May 2, 1916. *Effective June 15, 1916* (except as noted in Items Nos. 91 and 92).

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24017.

(Stamped:) Received; Interstate Commerce Commission; 28536; May 3 1916; Division of Tariffs. Cancelled by I. C. C. No. 1244; Effective 10-19-1918.

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Pages 4, 10, 12 and 18.

## PARTICIPATING CARRIERS.

*	NAMES OF CARRIERS.	Under powers of Attorney to F. A. Leland F. X. 1 No.	*
*	* The Atchison, Topeka and Santa Fe Ry. Co.	33	*
*	* Gulf, Colorado & Santa Fe Ry. Co.	39	*
*	* The Kansas City Southern Ry. Co.	24	*
*	* St. Louis and San Francisco R. R.	100	*
*	* James W. Lusk, W. C. Nixon, W. B. Biddle, Receivers.		*
*	* Texas and New Orleans R. R. Co.	12	*
*	* Houston & Texas Central R. R. Co.	16	*
*	* Texarkana & Ft. Smith Ry. Co.	20	*
*	* Midland Valley R. R. Co.	18	*

*Supplement No. 4.*

To. P. S. C.—Mo. No. 39 of F. A. Leland, Agent. C. R. C. No. 492 of Eugene Morris, Agent. Ohio No. 537 of Eugene Morris, Agent. I. C. C. No. 1137 of F. A. Leland, Agent. I. C. C. No. 588 of Eugene Morris, Agent.

Cancels Supplement No. 3. Supplement No. 4 contains all changes from the original Classification that are effective November 1, 1916.

### SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES—CIRCULAR No. 1-G.

(See page 2 for individual lines' tariff numbers.)

Containing Exceptions to Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.—Mo. No. 3), or re-issues thereof, and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex. (See Item No. 18, or reissues thereof) and moving under tariffs which are specifically made subject hereto.

Note. Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in

carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section ... of this tariff make a lower charge on any shipment than the rates in section ... of this tariff, the rates in section ... will be applied."

The ratings named in this Classification, as amended, are subject to the conditions of the carriers' bills of lading, and (unless otherwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C. Mo. No. 3), or reissues thereof.

This Classification, as amended, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued September 11, 1916. *Effective October 23, 1916.* (Except as noted on page 4 where reference is made to (106); in Item 30-A, and in other Individual Items.)

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24391.

(Stamped) Received Interstate Commerce Commission, 52796, September 13, 1916. Division of Tariffs. Public File.

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Page 14.

#### RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
* * *	* * *	* * *
Minimum weights on commodities in tank cars.	298 A 298	(1) The weights and charges on shipments in tank cars (***) shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-J, E. B. Boyd's I. C. C. No. A-623, *** or re-issues thereof), at actual or estimated weights provided in current Western Classification—except as provided in Sections (2) *** unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.

(2) When shipments of inflammable liquids, subject to Section 1825, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car

\* \* \* \* \*

### *Supplement No. 5.*

To P. S. C.—Mo. No. 39 of F. A. Leland, Agent; C. R. C. No. 492 of Eugene Morris, Agent; Ohio No. 537 of Eugene Morris, Agent; I. C. C. No. 1137 of F. A. Leland, Agent; I. C. C. No. 588 of Eugene Morris, Agent.

Cancels Supplement No. 4. Supplement No. 5 contains all changes from the original Classification that are effective November 23, 1916.

### **SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES--CIRCULAR NO. 1-G**

(See page 2 for individual lines' tariff numbers)

Containing Exceptions to Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.—Mo. No. 3), or re-issues thereof, and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex. (see item No. 18, or re-issues thereof), and moving under tariffs which are specifically made subject hereto.

Note.—Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section — of this tariff make a lower charge on any shipment than the rates in section — of this tariff, the rates in section — will be applied."

The ratings named in this Classification are subject to the conditions of the carriers' bills of lading, and (unless oth-

erwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof.

This Classification, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued October 5, 1916. *Effective November 16, 1916* (except as noted on pages 3, 4 and 5 where reference is made to (109); and in Individual Items).

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24473.

(Stamped:) Received; Interstate Commerce Commission; 57370; Oct 5 1916; Division of Tariffs.

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#### RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
Minimum weights on commodities in tank cars.	298-A cancels 298	(1) The weights and charges on shipments in tank cars (***) shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-J, E. B. Boyd's I. C. C. No. A 623, *** or re-issues thereof), at actual or estimated weights provided in current Western Classification—except as provided in Sections (2) *** unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.  (2) When shipments of inflammable liquids, subject to Section 1325, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.

Reissue; effective October 23, 1916, in Supplement No. 4.

*Supplement No. 7.*

To P. S. C.—Mo. No. 39 of F. A. Leland, Agent; C. R. C. No. 492 of Eugene Morris, Agent; Ohio No. 537 of Eugene Morris, Agent; *I. C. C. No. 1137 of F. A. Leland, Agent*; I. C. C. No. 588 of Eugene Morris, Agent.

Cancels Supplement No. 5. Supplement No. 7 contains all changes from the original Classification that are effective December 16, 1916. Supplement No. 6 suspends portions of Supplement No. 4.

**SOUTHWESTERN LINES' CLASSIFICATION  
EXCEPTIONS AND RULES--CIRCULAR NO. 1-G**

(See page 2 for individual lines' tariff numbers)

Containing Exceptions to Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof, and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex. (see item No. 18, or re-issues thereof), and moving under tariffs which are specifically made subject hereto.

Note.—Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section — of this tariff make a lower charge on any shipment than the rates in section — of this tariff, the rates in section — will be applied."

The ratings named in this Classification are subject to the conditions of the carriers' bills of lading, and (unless otherwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof.

This Classification, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued October 24, 1916. *Effective December 5, 1916* (except as noted in item 236-B, and in other individual items).

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24615.

(Stamped:) Received; Interstate Commerce Commission; 60419; Oct 25 1916; Division of Tariffs.

Page 16.

# RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
Minimum weights on commodities in tank cars.	298-A cancels 298	(1) The weights and charges on shipments in tank cars (***) shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-J, E. B. Boyd's I. C. C. No. A 623, *** or re-issues thereof), at actual or estimated weights provided in current Western Classification—except as provided in Sections (2) *** unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.  (2) When shipments of inflammable liquids, subject to Section 1325, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.  Reissue; effective October 23, 1916, in Supplement No. 4.

## Supplement No. 8.

To P. S. C.—Mo. No. 39 of F. A. Leland, Agent; C. R. C. No. 492 of Eugene Morris, Agent; Ohio No. 537 of Eugene Morris, Agent; I. C. C. No. 1137 of F. A. Leland, Agent; I. C. C. No. 588 of Eugene Morris, Agent.

Supplements Nos. 7 and 8 contain all changes from the original Classification that are effective on the date hereof. Supplement No. 6 suspends portions of Supplement No. 4.

**SOUTHWESTERN LINES' CLASSIFICATION  
EXCEPTIONS AND RULES--CIRCULAR NO. 1-G**

(See page 2 for individual lines' tariff numbers)

Containing Exceptions to Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof, and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex. (see item No. 18, or re-issues), and moving under tariffs which are specifically made subject hereto.

Note.—Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section — of this tariff make a lower charge on any shipment than the rates in section — of this tariff, the rates in section — will be applied."

The ratings named in this Classification are subject to the conditions of the carriers' bills of lading, and (unless otherwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof.

This Classification, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued November 23, 1916. *Effective January 4, 1917.*

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24675.

(Stamped:) Received; Interstate Commerce Commission; 65930; Nov 25 1916; Division of Tariffs.

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Page 3.

## PARTICIPATING CARRIERS.

• • • • •									
• NAMES OF CARRIERS.								Under powers of Attorney to F. A. Leland •	
								F. X. 1 No.	
•	•	•	•	•	•	•	•	•	•
•	St. Louis-San	Francisco	Ry.....					100	•
•	•	•	•	•	•	•	•	•	•

*Supplement No. 9.*

To P. S. C.—Mo. No. 39 of F. A. Leland, Agent; C. R. C. No. 492 of Eugene Morris, Agent; Ohio No. 537 of Eugene Morris, Agent; *I. C. C. No. 1137 of F. A. Leland, Agent*; I. C. C. No. 588 of Eugene Morris, Agent.

Cancels Supplement No. 8. Supplements Nos. 7 and 9 contain all changes from the original classification that are effective on the date hereof. Supplement No. 6 suspends portions of Supplement No. 4.

**SOUTHWESTERN LINES' CLASSIFICATION  
EXCEPTIONS AND RULES—CIRCULAR NO. 1-G**

(See page 2 for individual lines' tariff numbers)

Containing Exceptions to Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof, and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex. (see item No. 18, or re-issues), and moving under tariffs which are specifically made subject hereto.

Note.—Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section — of this tariff make a lower charge on any shipment than the rates in section — of this tariff, the rates in section — will be applied."

The ratings named in this Classification are subject to the conditions of the carriers' bills of lading, and (unless oth-

erwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof.

This Classification, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued December 23, 1916. *Effective February 3, 1917* (except as noted on page 4 where reference is made to (112); in item No. 948; and in other individual items).

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24779.

(Stamped:) Received; Interstate Commerce Commission; 3474; Dec 20 1916; Division of Tariffs.

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Page 4.

#### PARTICIPATING CARRIERS.

\* \* \* \* \*

* NAMES OF CARRIERS.	Under powers of Attorney to F. A. Leland *	
	F. X. 1 No.	
* St. Louis-San Francisco Ry.....	137	*
* * * * *		*

Page 12.

#### RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
Minimum weights on commodities in tank cars.	298-B * cancels 298-A	(1) The weights and charges on shipments in tank cars (***) shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. No. A-722, * * * or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections (2) * * * unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.  (2) When shipments of inflammable liquids subject to Section 1825, Rule 44 of current Western Classification, are loaded in tank cars, the don-es of

which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.

\* \* \* \* \*

### Supplement No. 12.

To P. S. C.—Mo. No. 39 of F. A. Leland, Agent; C. R. C. No. 492 of Eugene Morris, Agent; Ohio No. 537 of Eugene Morris, Agent; I. C. C. No. 1137 of F. A. Leland, Agent; I. C. C. No. 588 of Eugene Morris, Agent.

Cancels Supplement No. 9. Supplements Nos. 10 and 12 contain all changes from the original Classification that are effective April 16, 1917. Supplement No. 11 suspends portions of Supplement No. 4.

### SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES--CIRCULAR NO. 1-G

(See page 2 for individual lines' tariff numbers)

Containing Exceptions to Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof, and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex. (see item No. 18, or re-issues), and moving under tariffs which are specifically made subject hereto.

Note.—Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section — of this tariff make a lower charge on any shipment than the rates in section — of this tariff, the rates in section — will be applied."

The ratings named in this Classification are subject to the conditions of the carriers' bills of lading, and (unless otherwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof.

This Classification, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued February 23, 1917. *Effective April 5, 1917* (except as noted on page 3 where reference is made to (116); in item 400-C; and in other individual items.)

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 24992.

(Stamped:) Received; Interstate Commerce Commission; 13555; Feb 21 1917; Division of Tariffs.

Page 4.

#### PAR TICIPATING CARRIERS.

* NAMES OF CARRIERS.	Under powers of Attorney to F. A. Leland *	
	F. X. 1 No.	
* St. Louis-San Francisco Ry.....	137	*
Reissue; effective February 3, 1917, in Supplement No. 9.		

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#### RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
Minimum weights on commodities in tank cars.	298-B cancels 298-A	(1) The weights and charges on shipments in tank cars (***) shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K. E. B. Boyd's I. C. C. No. A-722, * * * or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections (2) * * * unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.
Reissue; effective February 3, 1917, in Supplement No. 9.		(2) When shipments of inflammable liquids subject to Section 1325, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.

*Supplement No. 16.*

To P. S. C.—Mo. No. 39 of F. A. Leland, Agent; C. R. C. No. 492 of Eugene Morris, Agent; Ohio No. 537 of Eugene Morris, Agent; I. C. C. No. 1137 of F. A. Leland, Agent; I. C. C. No. 588 of Eugene Morris, Agent.

(Cancels Supplement No. 12.) Supplements Nos. 15 and 16 contain all changes from the original Classification that are effective June 8, 1917. Supplement No. 11 suspends portions of Supplement No. 4. Supplement No. 14 suspends Supplement No. 13.

**SOUTHWESTERN LINES' CLASSIFICATION  
EXCEPTIONS AND RULES--CIRCULAR NO. 1-G**

(See page 2 for individual lines' tariff numbers)

Containing Exceptions to Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof, and Rules and Conditions governing traffic originating at or destined to points in Louisiana and Texas, also Texarkana, Ark.-Tex. (see item No. 18, or re-issues), and moving under tariffs which are specifically made subject hereto.

Note.—Whenever a carload or a less-than-carload commodity rate is established, it removes the application of the class rate to or from the same points on that commodity in carload quantities or less-than-carload quantities (as the case may be), except when and in so far as alternative use of class and commodity rates is specifically provided for by including in different sections of one and the same tariff such class and commodity rates, and by including in each section of such tariff the specific rule: "If the rates in section — of this tariff make a lower charge on any shipment than the rates in section — of this tariff, the rates in section — will be applied."

The ratings named in this Classification are subject to the conditions of the carriers' bills of lading, and (unless otherwise provided to the contrary) to the rules, conditions and requirements of Western Classification No. 54 (R. C. Fyfe's I. C. C. No. 12, P. S. C.-Mo. No. 3), or re-issues thereof.

This Classification, contains rates that are higher for shorter distances than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein.

Exception: Will not apply on traffic moving wholly within the State of Missouri.

Issued April 21, 1917. *Effective May 31, 1917* (except as noted on pages 3, 4 and 5 where reference is made to (119); in items 377-F, 949-D; and in other individual items).

Issued by Eugene Morris, Agent, Chicago, Ill.; F. A. Leland, Agent, St. Louis, Mo.

Authority No. 25196.

(Stamped:) Received; Interstate Commerce Commission; 24868; Apr 21 1917; Division of Tariffs.

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Page 4.

#### PARTICIPATING CARRIERS.

\* \* \* \* \*

NAMES OF CARRIERS.	Under powers of Attorney to F. A. Leland *
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F. X. 1 No.

St. Louis-San Francisco Ry.....	137
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Reissue; effective February 3 1917, in Supplement No. 9.

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#### RULES AND CONDITIONS.

SUBJECT	Item No.	RULES
Minimum weights on commodities in tank cars.	298-B cancels 298-A	(1) The weights and charges on shipments in tank cars (***) shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-K, E. B. Boyd's I. C. C. No. A-722, * * * or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections (2) * * * unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.
Reissue; effective February 2, 1917, in Supplement No. 9.		(2) When shipments of inflammable liquids subject to Section 1825, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.

\* \* \* \* \*

**Government's Exhibit 46.**

I. C. C. No. 1244. Cancels I. C. C. No. 1137, F. A. Leland, Agent.

UNITED STATES RAILROAD ADMINISTRATION.  
W. G. McADOO, DIRECTOR GENERAL OF RAILROADS.  
SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES CIRCULAR No. 1-H.  
(Cancels Southwestern Lines' Classification Exceptions and Rules Circular No. 1-G.)

containing

Exceptions to Western Classification No. 55.  
(R. C. Fyfe's I. C. C. No. 13 \* \* \* or reissues.)

and

Rules and Conditions governing traffic originating at or destined to points in

LOUISIANA AND TEXAS, ALSO TEXARKANA,  
ARK.-TEX.

(See item No. 42 or reissues.)

and moving under tariffs which are specifically made subject hereto.

\* \* \* \* \*  
Issued September 7, 1918.                      Effective October 19, 1918.

\* \* \* \* \*  
Issued by F. A. Leland, Agent, St. Louis, Mo.

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**Government's Exhibit 47.**

Only three Supplements to this Tariff will be in effect at any time.

I. C. C. No. 999. Cancels I. C. C. No. 889.

SOUTHWESTERN LINES TARIFF NO. 26-S

Cancels Southwestern Lines Tariff No. 26-R. For Individual Lines' Tariff Numbers, Current and Cancelled, see page 4.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 73 to 79, inclusive, and points in Texas, also Texarkana, Tex.-Ark., named on pages 44 to 62, inclusive.

Governed, except as otherwise provided herein, by WESTERN CLASSIFICATION No. 51 (F. J. Hoffman's I. C. C. No. 9) or reissues thereof; and SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES CIRCULAR No. 1-E (F. A. Leland's I. C. C. No. 931), or reissues thereof.

Special Notice.—The rates named in this Tariff are subject to the conditions of the Carriers' Bills of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

This Tariff contains rates that are higher for shorter than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by Authority of Interstate Commerce Commission Order F. S. No. 108 of July 12, 1911, F. S. No. 317 of October 10, 1911, Order F. S. No. 417 of December 12, 1911, Order F. S. No. 859 of March 16, 1912, and F. S. O. No. 1258 of June 1, 1912.

Issued June 20, 1913. *Effective August 1, 1913* (C. F. 23608) (C. F. 34901) except as noted on pages 51 and 66 where reference is made to (18); and in item 1656.

In view of the relinquishment of groups and the establishment of group rates in lieu of rates at individual points and other extraordinary conditions which obtain in this instance, changes in rates are not indicated in this tariff under special permission of the Interstate Commerce Commission No. 24971 of June 19, 1913.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 20350.

(Stamped:) Received; Interstate Commerce Commission; 39946; Jun 28 1913; Division of Tariffs. Cancelled by I. C. C. No. 1048; Effective July 24, 1914.

\* \* \* \* \*

# 1178 GULF REFINING COMPANY, A CORPORATION, vs.

Pages 6 and 7.

## PARTICIPATING CARRIERS.

Railway Abbreviations	NAMES OF CARRIERS ***.	Under Powers of Attorney to F.A. Leland Form F X 1 No.	*
K. C. S.....	The Kansas City Southern Ry. Co.....	24	..
St. L. & S. F....	St. Louis & San Francisco R. R. Co.....	65	..
	Thos. H. West, B. L. Winchell, Receivers.		
St. L. S. F. & T...	St. Louis, San Francisco & Texas Ry. Co..	12	..
T. & N.O.....	Texas & New Orleans R. R. Co.....	12	..
H. & T. C. ....	Houston & Texas Central R. R. Co.....	16	..
T. & Ft. S. ....	Texarkana & Ft. Smith Ry. Co.....	20	..

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## LIST OF OKLAHOMA POINTS FROM AND TO WHICH SPECIFIC RATES APPLY.

For Geographical list of Oklahoma points from and to which rates apply, showing Railroad Location and Rate Bases applicable, see pages 73 to 79, inclusive.

Index No. (See pages 73 to 79 inclusive)	STATIONS	Item Nos. ***.
10100	Kiefer.....	*** 1536 *** 2514 ***

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## GEOGRAPHICAL LIST OF TEXAS POINTS FROM AND TO WHICH RATES APPLY.—SHOWING GROUP BASES APPLICABLE.

Index Nos.	STATIONS ON	Group Bases
	T. & N. O. R. R.	
5836	West Port Arthur.....	8
5838	Port Arthur.....	8

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T. & FT. S. RY.									
7956	Port	Arthur	.....	.....	.....	.....	.....	.....	8

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GEOGRAPHICAL LIST OF OKLAHOMA POINTS FROM AND TO WHICH  
RATES APPLY.

ST. L. & S. F. R. R.									
Index Nos.	STATIONS ON							Group Bases	
10100	Kiefer	.....	.....	.....	.....	.....	.....	.....	.....

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COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item No.	COMMODITIES	FROM	TO Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
1536	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-E (F. A. Leland's I. C. C. No. 931), or reissues thereof.....</p> <p>Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-E (F. A. Leland's I. C. C. No. 931) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .</p>	<p>Following points in Oklahoma</p> <p>Kiefer</p>	* 37 *

*Supplement No. 10 to I. C. C. No. 999.* Cancels Supplement No. 9. Supplement No. 10 contains all changes from the original tariff that are effective on the date hereof.

**SOUTHWESTERN LINES TARIFF NO. 26-S**

For Individual Lines' Tariff Numbers, see page 2.

*Supplement No. 10.*

Cancels Supplement No. 9. Supplement No. 10 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 73 to 79, inclusive, of tariff and page 10 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 44 to 62, inclusive, of tariff, and pages 8 and 9 herein.

Governed, except as otherwise provided herein, by WESTERN CLASSIFICATION No. 52 (F. J. Hoffman's I. C. C. No. 10), or reissues thereof; and SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES CIRCULAR No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

Special Notice.—The rates named in this Tariff are subject to the conditions of the Carriers' Bills of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

This Tariff contains rates that are higher for shorter than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by Authority of Interstate Commerce Commission Order F. S. No. 108 of July 12, 1911, F. S. No. 317 of October 10, 1911, Order F. S. No. 417 of

December 12, 1911, Order F. S. No. 859 of March 16, 1912, F. S. No. 1258 of June 1, 1912, and F. S. No. 3033, of July 22, 1913.

Issued December 12th, 1913. *Effective January 24th, 1914*; except as noted on pages 9 and 10, where reference is made to (35); on page 24; in items 1422c and 2511a; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 20939.

(Stamped:) Received; Interstate Commerce Commission; 2625; Dec 17 1913; Division of Tariffs.

Page 32.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*

Item No.	COMMODITIES Carloads, * * *	FROM	TO Texas Groups Nos. 6 to 13 Inclusive Rates in Cents per 100 lbs.
1536a cancels 1536	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,090 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof. . . . .	Following points in Oklahoma * Kiefer *	37 *
Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026) or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .			

*Supplement No. 12 to I. C. C. No. 999.* Cancels Supplement No. 11. Supplement No. 12 contains all changes from the original tariff that are effective on the date hereof.

**SOUTHWESTERN LINES TARIFF NO. 26-S**

For Individual Lines' Tariff Numbers, see page 2.

*Supplement No. 12.*

Cancels Supplement No. 11. Supplement No. 12 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 73 to 79, inclusive, of tariff and page 11 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 44 to 62, inclusive, of tariff, and pages 9 and 10 herein.

Governed, except as otherwise provided herein, by WESTERN CLASSIFICATION No. 52 (F. J. Hoffman's I. C. C. No. 10), or reissues thereof; and SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES CIRCULAR No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

Special Notice.—The rates named in this Tariff are subject to the conditions of the Carriers' Bills of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

This Tariff contains rates that are higher for shorter than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by Authority of Interstate Commerce Commission Order F. S. No. 108 of July 12, 1911, F. S. No. 317 of October 10, 1911, Order F. S. No. 417 of

December 12, 1911, Order F. S. No. 859 of March 16, 1912, F. S. No. 1258 of June 1, 1912, and F. S. No. 3033, of July 22, 1913.

Issued February 18th, 1914. *Effective March 25th, 1914*; except as noted on pages 2 and 9 where reference is made to (39); on pages 26 to 30; on pages 9, 11, 21 and 22 and in items 1730b, 1776c, 1920a and 2508c where reference is made to (40); in item 2546; and in other individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 21151.

(Stamped:) Received; Interstate Commerce Commission; 13025; Feb 19 1914; Division of Tariffs.

\* \* \* \* \*

Page 34.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.
<p>Reissue; effective January 24, 1914, in Supplement No. 10.</p>			
1536a	<p>OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....</p>	Following points in Oklahoma	
cans			
1536		Kiefer	37 *

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. ....

\* \* \* \* \*

COMMODITY RATES.				
Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates in Cents per 100 lbs. •
• • • • •				
	Effective April 3rd, 1914.			
2546	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues.....	Kiefer, •	Following points in Texas; • Port Arthur	33

*Supplement No. 13 to I. C. C. No. 999.* Cancels Supplement No. 12. Supplement No. 13 contains all changes from the original tariff that are effective on the date hereof.

**SOUTHWESTERN LINES TARIFF NO. 26-S**  
For Individual Lines' Tariff Numbers, see page 2.

*Supplement No. 13.*

Cancels Supplement No. 12. Supplement No. 13 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 73 to 79, inclusive, of tariff and page 11 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 44 to 62, inclusive, of tariff, and pages 9 and 10 herein.

Governed, except as otherwise provided herein, by WESTERN CLASSIFICATION No. 52 (F. J. Hoffman's I. C. C. No. 10), or reissues thereof; and SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES CIRCULAR No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

**Special Notice.**—The rates named in this Tariff are subject to the conditions of the Carriers' Bills of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues

sues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

This Tariff contains rates that are higher for shorter than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by Authority of Interstate Commerce Commission Order F. S. No. 108 of July 12, 1911, F. S. No. 317 of October 10, 1911, Order F. S. No. 417 of December 12, 1911, Order F. S. No. 859 of March 16, 1912, F. S. No. 1258 of June 1, 1912, and F. S. No. 3033, of July 22, 1913.

Issued February 28th, 1914. *Effective April 4th, 1914*; except as noted on page 30 where reference is made to (43); and in individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 21217.

(Stamped:) Received; Interstate Commerce Commission; 14912; Feb 28 1914; Division of Tariffs.

\* \* \* \* \*

Page 34.

COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS  
LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs.

Reissue; effective January 24, 1914,  
in Supplement No. 10.

1536a can- cels	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298, of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....	Following points in Oklahoma "	
1536		Kelfer,	37 *

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

Page 54.

## COMMODITY RATES.

Item No.	COMMODITIES Carloads, * * *	FROM	TO	Rates cents per 100 lbs.
Reissue; effective April 3rd, 1914, in Supplement No. 12.				
2546	Gasoline in tank cars, minimum weight as provided in Item 293 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues. . . . .	* Kiefer *	Following points in Texas: *  Port Arthur	33

*Supplement No. 14 to I. C. C. No. 999.* Cancels Supplement No. 13. Supplement No. 14 contains all changes from the original tariff that are effective on the date hereof.

## SOUTHWESTERN LINES TARIFF NO. 26-S

For Individual Lines' Tariff Numbers, see page 2.

*Supplement No. 14.*

Cancels Supplement No. 13. Supplement No. 14 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on classes and commodities between points in Oklahoma, named on pages 73 to 79, inclusive, of tariff and page 11 herein, and points in Texas, also Texarkana, Tex.-Ark., named on pages 44 to 62, inclusive, of tariff, and pages 9 and 10 herein.

Governed, except as otherwise provided herein, by WESTERN CLASSIFICATION No. 52 (F. J. Hoffman's I. C. C. No. 10), or reissues thereof; and SOUTHWESTERN LINES' CLASSIFICATION EXCEPTIONS AND RULES CIRCULAR.

LAR No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.

Special Notice.—The rates named in this Tariff are subject to the conditions of the Carriers' Bills of Lading, and apply from all points specified to all points specified via all lines parties, unless specifically provided to the contrary in Items 78 to 1380, inclusive, or reissues, or in other individual items.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates throughout this Tariff that are made subject to Items Nos. 48, 54, 60 and 66, or reissues thereof, are not made applicable from and to all intermediate points. Upon reasonable request therefor rates which will not exceed those published in such items from or to (as the case may be) the next more distant station will (under authority granted by the Interstate Commerce Commission) be established in the manner therein indicated by the carriers parties to this Tariff, upon one day's notice to the Commission and the public.

This Tariff contains rates that are higher for shorter than for longer distances over the same route, such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by Authority of Interstate Commerce Commission Order F. S. No. 108 of July 12, 1911, F. S. No. 317 of October 10, 1911, Order F. S. No. 417 of December 12, 1911, Order F. S. No. 859 of March 16, 1912, F. S. No. 1258 of June 1, 1912, and F. S. No. 3033, of July 22, 1913.

Issued April 11th, 1914. *Effective May 20th, 1914*; except as noted on page 23 where reference is made to (44); on page 26 where reference is made to (45); and in individual items.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 21377.

(Stamped:) Received; Interstate Commerce Commission; 28556; Apr 14 1914; Division of Tariffs.

• • • • •

# 1190 GULF REFINING COMPANY, A CORPORATION, v3.

Page 34.

## COMMODITY RATES FROM POINTS SPECIFIED TO TEXAS POINTS LOCATED IN GROUPS 1 TO 13, INCLUSIVE, \* \* \*.

Item	COMMODITIES	FROM	TO
No.	Carloads, * * *	*	Texas Groups Nos. 6 to 13 inclusive Rates in Cents per 100 lbs. *

Reissue effective January 24, 1914,  
in Supplement No. 10.

1536a cancels 1536	OILS: Petroleum Oil and its Products, * * * listed under head of "Petroleum and Petroleum Products," and rated Fifth Class in current Western Classification; * * *; in straight or mixed carloads; minimum weight 26,000 pounds, except that freight charges on shipments transported in tank cars will be determined in the manner prescribed in Item No. 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof.....	Following points in Oklahoma " "	
		Kiefer	37 *

Unless specifically provided to the contrary in this tariff or in Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues thereof, shipments of petroleum oil and its products specified in this item will be subject to the rules, conditions and estimated weights provided in current Western Classification. . . . .

Page 54.

## COMMODITY RATES.

Item	COMMODITIES	FROM	TO	Rates in Cents per 100 lbs.
No.	Carloads, * * *			
	Reissue; effective April 3rd, 1914, in Supplement No. 12.			
2546	Gasoline in tank cars, minimum weight as provided in Item 298 of Southwestern Lines' Classification Exceptions and Rules-Circular No. 1-F (F. A. Leland's I. C. C. No. 1026), or reissues.....	Kiefer	Following points in Texas: *	
			Port Arthur	33

**Government's Exhibit 52.**

(Stamp: Received Interstate Commerce Commission  
54130 Sep 20 1916 Division of Tariffs)

I. C. C. No. A-722. Cancels I. C. C. No. A-623.

\* \* \* \* \*

*Circular No. 6-K* \* \* \* of United States and Canadian Railroads listed on pages 8 to 16 herein, showing Capacities of Tank Cars used in the Transportation of Liquid Freight.

The provisions of this circular apply only on traffic covered by tariffs which make reference thereto, or preceding issues thereof, or in connection with tariffs which refer to publications superseded by preceding issues of this circular, or on traffic covered by tariffs governed by classifications which make reference thereto.

Special Note.—The weights shown herein are only for convenience in billing, and must not be used when in conflict with the provisions of tariffs or classifications of initial carriers at the point of shipment.

Issued September 20, 1916. Effective October 1, 1916 (except as noted in individual items). Issued under special permission of the Interstate Commerce Commission No. 38719 of September 6, 1916.

Issued by E. B. Boyd, Agent, Chicago.

(Stamp: Cancelled by I. C. C. No. A-783, effective 6-8-17.)

\* \* \* \* \*

*Pages 8 to 16, inclusive.*

**ISSUING CARRIERS.**

This circular is issued by F. B. Boyd, Agent, on behalf of the following lines under authority shown opposite each line:

CARRIERS.	FX1-No. Except as noted.
* * * * *	* * *
Atchison, Topeka & Santa Fe R'y Co.....	67
* * * * *	* * *
Gulf, Colorado & Santa Fe R'y Co.....	37
* * * * *	* * *
Kansas City Southern Ry. Co.....	38
* * * * *	* * *
Midland Valley R. R. Co.....	29
* * * * *	* * *

St. Louis & San Francisco R. R. Co..... 102  
 (J. W. Lusk, W. C. Nixon, W. B. Biddle,  
 Receivers)

• • • • •  
 Texarkana & Ft. Smith Ry. Co..... 30  
 • • • • •

*Pages 120 to 126, inclusive.*

### GULF REFINING COMPANY.

Cars marked: "G.R.C.X." Used for transporting petroleum and its products.

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
168	7016	1111	8137
309	6662	1113	8139
328	7062	1136	8144
332	7065	1143	8371
422	7044	1153	8130
428	8175	1155	8130
434	8180	1178	8130
437	8137	1206	8089
445	8140	1209	8092
620	8018	1211	8093
621	8005	1220	8096
629	7604	1225	8095
950	8059	1229	8086
961	8056	1232	8095
973	8056	1237	8099
1001	8158	1239	8099
1014	8161	1243	8093
1024	8145	1278	8092
1029	8225	1321	8089
1030	8143	1327	8096
1038	8151	1347	8090
1039	8157	1356	8093
1054	8094	1358	8092
1061	8180	1359	8086
1064	8144	1368	8093
1072	8138	1369	8092
1079	8147	1370	8088
1080	8185	1378	8093
1083	8140	1385	8092
1100	8134	1397	8099

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
1462	8093	1763	8100
1507	12023	2006	8146
1602	8023	2008	8148
1607	8016	2013	8148
1612	8023	2016	8153
1619	8016	2025	8153
1621	8016	2027	8149
1718	8103		

*Supplement No. 37.*

• • • • •

to

• • • • •

I. C. C. No. A-722.

*Supplement No. 37.*

• • • • •

to

Circular No. 6-K.

• • • • •

Issued November 13, 1916. Effective November 24, 1916  
(except as noted in individual items).

Issued under authority of Rule 10, Interstate Commerce  
Commission Tariff Circular No. 18-A.

• • • • •

*Page 3.*

Carriers parties hereto are as shown in circular, except:

**ISSUING CARRIERS.**

Date effective	In supple- ment No.	Change	Carriers	FX1-No. Except as noted.
1-1-17	37	Change	St. Louis - San Francisco Ry. Co.	102

**Government's Exhibit 53.**

(Stamp: Received Interstate Commerce Commission  
38644 May 29 1917 Division of Tariffs)

I. C. C. No. A-785. Cancels I. C. C. No. A-722.

(Stamp: Cancelled by I. C. C. No. A-826 effective 12-14-1917.)

*Circular No. 6-L* Cancels Circular No. 6-K of United States and Canadian Railroads listed on pages 8 to 16 herein. Showing Capacities of Tank Cars used in the transportation of Liquid Freight.

The provisions of this circular apply only on traffic covered by tariffs which make reference thereto, or preceding issues thereof, or in connection with tariffs which refer to publications superseded by preceding issues of this circular, or on traffic covered by tariffs governed by classifications which make reference thereto.

Issued May 28, 1917. Effective June 8, 1917 (except as noted in individual items).

Issued on one day's notice, under special permission of the Interstate Commerce Commission No. 42116 of May 4, 1917.

Issued by E. B. Boyd, Agent, Chicago.

*Pages 8 to 16, inclusive.*

**ISSUING CARRIERS.**

This circular is issued by E. B. Boyd, Agent, on behalf of the following lines under authority shown opposite each line:

CARRIERS.	FX1-No. Except as noted.
Atchison, Topeka & Santa Fe R'y Co.....	67
Gulf, Colorado & Santa Fe R'y Co.....	37
Kansas City Southern Ry. Co.....	38
Midland Valley R. R. Co.....	29

St. Louis-San Francisco Ry. Co.....	156
Texarkana & Ft. Smith Ry. Co.....	30

*Pages 136 to 142, inclusive.*

## GULF REFINING COMPANY.

Cars marked: "G.R.C.X." Used for transporting petroleum and its products.

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
449	7060	1743	8097
610	8012	1774	8100
924	8059	1786	8100
926	8056	1798	8100
1033	8173	1850	8175
1037	8191	1852	8170
1071	8136	1853	8172
1127	8056	1854	8176
1201	8082	1855	8179
1206	8089	1856	8178
1232	8095	1858	8173
1245	8096	1864	8173
1254	8092	1865	8175
1265	8089	1946	8011
1268	8095	1947	8013
1270	8088	1950	8013
1271	8095	1951	8011
1366	8093	1956	8009
1424	8090	1957	8007
1624	8014	1959	8005
1706	8098	1974	8007
1708	8101	1978	8014
1710	8100	1981	8008
1721	8101	1983	8006
1727	8101	2022	8152
1728	8101	2027	8149
1729	8098		

1196 GULF REFINING COMPANY, A CORPORATION, vs.

(Stamp: Received Interstate Commerce Commission  
62123 Sep 11 1917 Division of Tariffs)

*Supplement No. 39.*

• • • • •  
to

• • • • •  
I. C. C. No. A-785.

*Supplement No. 39.*

• • • • •  
to

• • • • •  
Circular No. 6-L.

Issued September 10, 1917. Effective September 21, 1917  
(except as noted in individual items).

Issued under authority of Rule 10, Interstate Commerce  
Commission Tariff Circular 18-A.

Issued by E. B. Boyd, Agent, Chicago.

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*Page 12.*

GLEN-POOL TANK LINE COMPANY.

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Car No.	Full capacity of shell Gallons.
600	8052

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Stamp: Received Interstate Commerce Commission  
70334 Nov 13 1917 Division of Tariffs

*Supplement No. 73.*

• • • • •  
to

• • • • •  
I. C. C. No. A-785.

*Supplement No. 73.*

• • • • •  
to

• • • • •  
Circular No. 6-L.

Issued November 12, 1917. Effective November 23, 1917 (except as noted in individual items).

Issued under authority of Rule 10, Interstate Commerce Commission Tariff Circular No. 18-A.

Issued by E. B. Boyd, Agent, Chicago.

\* \* \* \* \*

Page 6.

### GLEN-POOL TANK LINE COMPANY.

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
625	8050	630	8055

### Government's Exhibit 54.

(Stamp: Received Interstate Commerce Commission 561 Dec 6 1917 Division of Tariffs) Stamp: Cancelled by I. C. C. No. 906 effective Augu 26, 1918. I. C. C. No. A-826. Cancels

\* \* \* \* \*

*Circular No. 6-M*, Cancels Circular No. 6-L \*\*\* of United States and Canadian Railroads listed on pages 8 to 16 herein. Showing Capacities of Tank Cars used in the transportation of Liquid Freight.

The provisions of this circular apply only on traffic covered by tariffs which make reference thereto, or preceding issues thereof, or in connection with tariffs which refer to publications superseded by preceding issues of this circular, or on traffic covered tariffs governed by classifications which make reference thereto.

Issued December 3, 1917. Effective December 14, 1917 (except as noted in individual items).

Issued on one day's notice, under special permission of the Interstate Commerce Commission No. 44411, of November 17, 1917.

Issued by E. B. Boyd, Agent, Chicago.

\* \* \* \* \*

*Pages 8 to 16, inclusive.*

## ISSUING CARRIERS.

This circular is issued by E. B. Boyd, Agent, on behalf of the following lines under authority shown opposite each line:

CARRIERS.	FX1-No. Except as noted.
Atchison, Topeka & Santa Fe Ry. Co.....	67
Gulf, Colorado & Santa Fe Ry. Co.....	37
Kansas City Southern Ry. Co.....	38
Midland Valley R. R. Co.....	29
St. Louis-San Francisco Ry. Co.....	156
Texarkana & Ft. Smith Ry. Co.....	30

*Pages 145 and 146.*

## GLEN-POOL TANK LINE COMPANY.

Cars marked: "G.P.T.X."

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
401	8048	503	8250
406	8045	554	8254
436	8042		

*Pages 150 to 157, inclusive.*

## GULF REFINING COMPANY.

Cars marked: "G. R. C. X."

Used for transporting petroleum and its products.

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
764	8044	1228	8089
1116	8090	1250	8098

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
1277	8093	2123	8080
1335	8090	2124	8084
1400	8093	2149	8083
1430	8095	2150	8074
1431	8090	2151	8079
1712	8101	2154	8078
1726	8097	2159	8079
1744	8096	2160	8084
1816	8212	2166	8078
1854	8176	2171	8079
1979	8015	2172	8082
2101	8080	2177	8085
2103	8084	2178	8074
2106	8077	2182	8080
2107	8080	2183	8078
2108	8084	2189	8079
2115	8075	2197	8077
2116	8083	2198	8080
2119	8084	2199	8078
2120	8077		

### Government's Exhibit 55.

Stamp: Received Interstate Commerce Commission  
 51747 Aug 16 1918 Division of Tariffs Stamp: Can-  
 celled by I. C. C. No. A-1029 8-8-1919. I. C. C. No. A-906.  
 Cancels I. C. C. No. A-826.

United States Railroad Administration; W. G. McAdoo,  
 Director General of Railroads. \* \* \*

*Circular No. 6-N*, Cancels *Circular No. 6-M* \* \* \* of  
 United States and Canadian Railroads listed on pages 8 to  
 16 herein. Showing capacities of Tank Cars used in the trans-  
 portation of Liquid Freight.

The provisions of this circular apply only on traffic cov-  
 ered by tariffs which make reference thereto, or preceding  
 issues thereof, or in connection with tariffs which refer to  
 publications superseded by preceding issues of this circular,  
 or on traffic covered by tariffs governed by classifications  
 which make reference thereto.

Issued August 16, 1918. Effective August 26, 1918 (ex-  
 cept as noted in individual items).

# 1200 GULF REFINING COMPANY, A CORPORATION, vs.

Published for the Director General of Railroads and filed on one day's notice with the Interstate Commerce Commission under authority of Section 2, of Circular No. 1-A of the Director, Division of Traffic, dated July 1, 1918, and under special permission of the Interstate Commerce Commission No. 47244 of July 31, 1918.

Issued by E. B. Boyd, Agent, Chicago.

• • • • •

*Pages 8 to 16, inclusive.*

## ISSUING CARRIERS.

This circular is issued by E. B. Boyd, Agent, on behalf of the following lines under authority shown opposite each line:

CARRIERS.	FX1-No. Except as noted.
Atchison, Topeka & Santa Fe Ry. Co.....	67
Gulf, Colorado & Santa Fe Ry. Co.....	37
Kansas City Southern Ry. Co.....	38
Midland Valley R. R. Co. ....	29
St. Louis-San Francisco Ry. Co.....	156
Texarkana & Ft. Smith Ry. Co.....	30

*Pages 168 to 176, inclusive.*

## GULF REFINING COMPANY.

Cars marked: "G.R.C.X."

Used for transporting petroleum and its products.

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
251	6510	1455	8090
745	8078	1470	8098
1381	8090	1611	8017
1383	8096	1707	8101
1446	8093	1762	8098

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
1930	8049	2157	8072
1967	8009	2170	8084
1976	8006	2173	8074
2110	8081	2185	8080
2112	8083	2194	8081
2113	8078	2196	8083
2155	8080		

Pages 294 and 298.

PROCTER & GAMBLE COMPANY.

Cars marked: P.G.X.

Car No.	Full capacity of shell. Gallons.
1549	8029

UNITED STATES RAILROAD ADMINISTRATION.

W. G. McAdoo, *Director General of Railroads.*

*Supplement No. 18.*

• • • • •  
to  
• • • • •  
I. C. C. No. A-906.

*Supplement No. 18.*

• • • • •  
to  
Circular No. 6-N.

Issued October 21, 1918. Effective November 1, 1918  
(except as noted in individual items).

Issued under authority of Rule 10, Interstate Commerce  
Commission Tariff Circular No. 18-A.

Issued by E. B. Boyd, Agent, Chicago.

(Stamp: Received Interstate Commerce Commission  
59378 Oct 22 1918 Division of Tariffs)

• • • • •

Page 7.

## GULF REFINING COMPANY.

Car No.	Full capacity of shell. Gallons.	Car No.	Full capacity of shell. Gallons.
2200	8072	2240	8072
2207	8070	2245	8072
2209	8065	2248	8065
2223	8065	2249	8062
2230	8072		

**Government's Exhibit 56.**

Only two supplements to this Tariff will be in effect at any time.

*I. C. C. No. 1253* Cancels *I. C. C. No. 1219*.

## UNITED STATES RAILROAD ADMINISTRATION,

W. G. McAdoo, Director General of Railroads

## SOUTHWESTERN LINES TARIFF NO. 79-B

Cancels Southwestern Lines' Tariff No. 79-A. For Individual Lines Tariff Numbers, current and cancelled, see page 3.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt carloads (see page 9) from Oklahoma producing points and Ft. Smith, Ark. (shown on pages 11 to 14, inclusive), to interstate points (see pages 15 to 18, inclusive).

Governed, except as otherwise provided herein, by Western Classification No. 55 (R. C. Fyfe's *I. C. C. No. 13*), or reissues thereof.

The rates named in this tariff are subject to the conditions of the Carrier's bill of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this Tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this Tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the

carriers parties to this Tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein, and F. S. O. No. 7316 of May 27, 1918.

Issued November 20, 1918. *Effective December 31, 1918*; except as noted on page 5, where reference is made to note A, and on pages 11, 12, 13, 14, 21, 34 and 80, where reference is made to character (17).

Increases resulting from application of rule governing disposition of fractions contained in this schedule are filed under authority of the Interstate Commerce Commission's Fifteenth Section Order No. 909 of October 24, 1918, without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

Changes which result from additions of or abandonment of stations and station facilities contained in this Tariff are filed under authority of the Interstate Commerce Commission's Fifteenth Section Order No. 250 of January 8, 1918, without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

Issued by F. A. Leland, Agent, St. Louis, Mo.

Authority No. 26185. C. F. 4390.

(Stamped:) Received; Interstate Commerce Commission; 62606; Nov 23 1918; Division of Tariffs. Cancelled by I. C. C. No. 1338; Effective Dec 21 1919.

\* \* \* \* \*

Pages 4, 5, 6, 7, and 8.

#### PARTICIPATING CARRIERS.

*	NAME OF CARRIERS	Under power of attorney to F. A. Leland, Agent F X 1, No.	*
*	Atchison, Topeka and Santa Fe Ry. Co. (The)...	33	..
*	Gulf, Colorado & Santa Fe Ry. Co.....	39	*
*	Houston & Texas Central R. R. Co.....	16	*
*	Kansas City Southern Ry. Co. (The).....	24	*

# 1204 GULF REFINING COMPANY, A CORPORATION, vs.

Midland Valley R. R. Co.....	18	
St. Louis-San Francisco Ry. Co.....	137	
Texarkana & Ft. Smith Ry. Co.....	20	
Texas and New Orleans R. R. Co.....	12	

Pages 11 and 12.

## OKLAHOMA (\*\*\* ) PRODUCING POINTS.

POINTS	Railroad Location	Group and Rate Basis *
Cushing.....	A. T. & S. F.....	A..... *
Drumright..... (See notes 2 ***)	A. T. & S. F.....	(Cushing (A.T.&S.F.) ( rate plus one cent ( per one hundred ( pounds.....
Jenks.....	M. V. ....	A..... *
Kiefer.....	(St. L-S. F..... (M. V.	A..... *

Page 14.

NOTE 2. Rates from Drumright, \*\*\* apply via Cushing, Okla., and A. T. & S. F. Ry. only.

Page 20.

## GENERAL APPLICATION OF RATES.

ITEM NO.	SUBJECT	APPLICATION
5	Commodity Descriptions	Where reference is made to this Item the rates apply on: (For rates, see pages *** 44 to 48, inclusive, ***) COLUMN 1: Petroleum Oil and its Products *** listed under head of "Petroleum and Petroleum Products," and rated Fifth class in current Western Classification; ***

Page 21.

## RULES AND CONDITIONS.

SUBJECT	ITEM NO.	RULES
Extent to which rates are governed by Western Classification	57	<p>The ratings, rules and regulations, estimated and minimum weights, shipping and packing requirements, allowances and privileges, or other provisions or conditions authorized by this Tariff, abrogate and supersede those of Western Classification, in conflict.</p> <p>When the ratings in this Tariff are silent as to rules and regulations, estimated and minimum weights, shipping and packing requirements, allowances and privileges or other provisions or conditions, the ratings which are prescribed in such commodity items shall be subject to the terms (including estimated and minimum weights, shipping and packing requirements, or other provisions or conditions), prescribed for in connection with the ratings in the current Western Classification, on the same commodity.</p>

Page 22.

## RULES AND CONDITIONS.

SUBJECT	ITEM NO.	RULES
Minimum Weights on Commodities in Tank Cars.	90	<p>1. The weights and charges on shipments in tank cars, shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-N, E. B. Boyd's I. C. C. No. A-906, or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections 2, 3 and 4—unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.</p> <p>2. When shipments of Inflammable Liquids, subject to Section 1825, Rule 44 of current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the two (2) per cent outage as required, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the two (2) per cent outage. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.</p>

# 1206 GULF REFINING COMPANY, A CORPORATION, vS.

Pages 47 and 48.

Petroleum and its Products, as described in Item No. 5, or re-issues.

TO	FROM (See pages 11 to 14, inclusive.) Groups A *** Columns (See Item 5, or reissues 1 *** Rates in Cents Per 100 Pounds									
	TEXAS POINTS (***)									
	Port Arthur.....	43½								
	West Port Arthur.....	43½								

Pages 62 and 66.

TO	Crude *** Petroleum Oil *** FROM (See pages 11 to 14, inclusive) Groups A, *** Rates in Cents Per 100 Pounds									
	TEXAS POINTS (***)									
	Port Arthur.....	22								
	West Port Arthur.....	22								

Page 90.

Rate Section No. 2.

## MISCELLANEOUS RATES.

Item No.	COMMODITY	FROM (Oklahoma Points)	TO	Rates in cents per 100 lbs.
660	Gasoline in tank cars, minimum weight as provided in Item No. 90, or re-issues. ....	Kiefer....	Port Arthur, Tex. West Port Arthur, Tex.	37½

Page 92.

## MISCELLANEOUS RATES.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No 6-N, E. B. Boyd's I. C. C. No. A-906), or reissues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the trucks will govern as minimum.

* * * * *										
TO TEXAS STATIONS * * *										Rates in cents per 100 pounds.
* * * * *										
Item No. 715.										
From OKLAHOMA POINTS										
* * * * *										
Cushing										
* * * * *										
T. & N. O. R. R. STATIONS:										
* * * * *										
West Port Arthur.....										24
Port Arthur.....										24
* * * * *										
T. & FT. S. RY. STATIONS:										
All Stations.....										24

* * * * *										
TO TEXAS STATIONS * * *										Rates in cents per 100 pounds.
Item No. 705.										
FROM										
* * * * *										
Jenks. ....Okla.										
* * * * *										
Kiefer. ....Okla.										
* * * * *										
Port Arthur .....										24
* * * * *										

Supplement No. 10 to I. C. C. No. 1219. *Supplement No. 5 to I. C. C. 1253.* Supplement No. 1 contains all changes from the original tariff that are effective on the date hereof.

## UNITED STATES RAILROAD ADMINISTRATION,

W. G. McAdoo, Director General of Railroads

## SOUTHWESTERN LINES TARIFF NO. 79-B

*Supplement No. 10.*

## SOUTHWESTERN LINES TARIFF NO. 79-A

For Individual Lines' Tariff Numbers, see page 2.

*Supplement No. 1.*

Supplement No. 1 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt tar, asphaltum, axle grease and petroleum liquid asphalt carloads (see page 9 of tariff) from Oklahoma producing points and Ft. Smith, Ark. (shown on pages 11 to 14, inclusive, of tariff, as amended) to interstate points (see pages 15 to 18, inclusive, of tariff, as amended).

Governed, except as otherwise provided herein, by Western Classification No. 55 (R. C. Fyfe's I. C. C. No. 13), or reissues thereof.

The rates named in this tariff are subject to the conditions of the Carrier's bill of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this Tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this Tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this Tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein, and F. S. O. No. 7316 of May 27, 1918.

Issued December 16, 1918. *Effective January 31, 1919*; except as noted on pages 2, 3, 4 and 5, and in other individual items).

Changes which result from additions of or abandonment of stations and station facilities contained in this Tariff are filed under authority of the Interstate Commerce Commission's Fifteenth Section Order No. 250 of January 8, 1918, without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

Issued by F. A. Leland, Agent, St. Louis, Mo. (Appointment Notice No. 2.)

Authority No. 26214.

(Stamped:) Received; Interstate Commerce Commission; 1830; Dec 19 1918; Division of Tariffs.

\* \* \* \* \*

Page 3.

RULES AND CONDITIONS.

SUBJECT	Item No.	RULES.
Minimum weights on commodities in Tank Cars	90-A cancels	<p>1. The weights and charges on shipments in tank cars, shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-N, E. B. Boyd's I. C. C. No. A-906, or reissues), at actual or estimated weights provided in current Western Classification—except as provided in Sections 2, 3 and 4—unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.</p> <p>2. When shipments of Inflammable Liquids, subject to Interstate Commerce Commission's Regulations for the Transportation of Dangerous Articles other than Explosives by Freight as provided in current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the outage as required by Section 1825-A of Regulations referred to, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the outage prescribed. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.</p>

\* \* \* \* \*

*Supplement No. 2 to I. C. C. No. 1253.* Cancels Supplement No. 1. Supplement No. 2 contains all changes from the original tariff that are effective on the date hereof.

UNITED STATES RAILROAD ADMINISTRATION,  
Director General of Railroads

SOUTHWESTERN LINES TARIFF NO. 79-B  
For Individual Lines' Tariff Numbers, see page 2.

*Supplement No. 2*

Cancels Supplement No. 1. Supplement No. 2 contains all changes from the original tariff that are effective on the date hereof.

Local, joint and proportional tariff, applying on petroleum and petroleum products, asphalt, asphalt rock, asphalt

tar, asphaltum, axle grease and petroleum liquid asphalt carloads (see page 9 of tariff) as amended, from Oklahoma producing points and Ft. Smith, Ark. (shown on pages 11 to 14, inclusive, of tariff, as amended), to interstate points (see pages 15 to 18, inclusive, of tariff, as amended).

Governed, except as otherwise provided herein, by Western Classification No. 55 (R. C. Fyfe's I. C. C. No. 13), or reissues thereof.

The rates named in this tariff are subject to the conditions of the Carrier's bill of lading.

By authority of Rule 77 of Interstate Commerce Commission Tariff Circular No. 18-A, rates in this Tariff are not made applicable FROM all intermediate points. Upon reasonable request therefor, rates which will not exceed those in effect, and specifically published in this Tariff from the next more distant point on the same railroad, will, under authority granted by the Interstate Commerce Commission, be established by the carriers parties to this Tariff from any intermediate point, upon one day's notice to the Commission and to the public.

This Tariff contains rates that are higher for shorter distances than for longer distances over the same route. Such departure from the terms of the Amended Fourth Section of the Act to Regulate Commerce is permitted by authority of Interstate Commerce Commission Fourth Section Orders, as indicated in individual items herein, and F. S. O. No. 7316 of May 27, 1918.

Issued January 17, 1919. *Effective March 1, 1919* (except as noted on page 6, and in other individual items).

Changes which result from additions of or abandonment of stations and station facilities contained in this Tariff are filed under authority of the Interstate Commerce Commission's Fifteenth Section Order No. 250 of January 8, 1918, without formal hearing, which approval shall not affect any subsequent proceeding relative thereto.

Issued by F. A. Leland, Agent, St. Louis, Mo. (Appointment Notice No. 2.)

Authority No. 26291.

(Stamped:) Received; Interstate Commerce Commission; 5303; Jan 18 1919; Division of Tariffs.

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Page 3.

## RULES AND CONDITIONS.

SUBJECT	ITEM NO.	RULES
Minimum weights on commodities in tank cars.	90-A cancels 90	<p>1. The weights and charges on shipments in tank cars, shall be based on the full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-N, E. B. Boyd's I. C. C. No. A-906, or re-issues), at actual or estimated weights provided in current Western Classification—except as provided in Sections 2, 3 and 4—unless the weight carrying capacity of the car trucks is less, in which case the actual weight, subject to the weight carrying capacity of the car trucks will govern as a minimum.</p> <p>2. When shipments of Inflammable Liquids, subject to Interstate Commerce Commission's Regulations for the Transportation of Dangerous Articles other than Explosives by Freight as provided in current Western Classification, are loaded in tank cars, the domes of which are not of sufficient capacity to cover the outage as required by Section 1325-A of Regulations referred to, an allowance will be made from the shell capacity of tank, to cover the difference between the dome capacity and the outage prescribed. Shippers must show on bills of lading or shipping receipt both the shell and dome capacity of car.</p>

Re-issue; effective  
January 31, 1919, in  
Supplement No. 1:

Page 6.

Rate Section No. 2.

## MISCELLANEOUS RATES.

Rates in cents  
per 100 pounds.

Unrefined Naphtha, in tank cars, minimum weight full shell capacity of the tank (as shown in United States and Canadian Railroads' Circular No. 6-N, E. B. Boyd's I. C. C. No. A-906), or re-issues, at estimated weight of 6.6 pounds per gallon, unless the weight carrying capacity of the car trucks is less, in which case the actual weight subject to the weight carrying capacity of the trucks will govern as minimum.

TO	RATES
Item No. 715-A, Cancels 715.	
From OKLAHOMA POINTS.	
Cushing	
T. & N. O. R. R. STATIONS:	
West Port Arthur.....	24
Port Arthur.....	24
T. & FT. S. RY. STATIONS:	
All Stations.....	24

*Supplement No. 3.*

To I. C. C. No. 1253, Cancels Supplement No. 2. Supplement No. 3 contains all changes from the original tariff that are effective on the date hereof.

UNITED STATES RAILROAD ADMINISTRATION, DIRECTOR GENERAL OF RAILROADS, SOUTHWESTERN LINES TARIFF NO. 79-B.

For Individual Lines' Tariff Numbers, see page 2.

Supplement No. 3, Cancels Supplement No. 2. Supplement No. 3 contains all changes from the original tariff that are effective on the date hereof.

Local, Joint and Proportional Tariff applying on Petroleum and Petroleum Products, \* \* \* Carloads, \* \* \* From Oklahoma Producing Points and Ft. Smith, Ark., (Shown on pages 11 to 14, inclusive, of Tariff, as amended) to Interstate Points (See pages 15 to 18, inclusive, of Tariff, as amended)

Governed, except as otherwise provided herein, by Western Classification No. 55 (R. C. Fyfe's I. C. C. No. 13), or reissues thereof.

• • • • •  
Issued February 8, 1919. Effective March 21, 1919.

• • • • •  
Issued by F. A. Leland, Agent, St. Louis, Mo. \* \* \*

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**Government's Exhibit 57.**

*Tariff Circular No. 18-A.*

Contains revision of and cancels tariff Circular 17-A and Supplement No. 1. Also cancels special orders No. 4. No. 7, and No. 11, and special circulars (Bureau of Tariffs) No. 8 and No. 9.

INTERSTATE COMMERCE COMMISSION.

Regulations to Govern the Construction and Filing of Freight Tariffs and Classifications and Passenger Fare Schedules.

Administrative Rulings.

Revised by order of Commission. Approved February 13, 1911; Effective March 31, 1911 (except as noted in individual items).

Washington Government Printing Office 1911

• • • • •

*Page 3.*

Regulations Issued by the Interstate Commerce Commission,  
Under Authority of Section 6 of the Act to Regulate  
Commerce as Amended June 18, 1910, to Govern the Con-  
struction and Filing of Freight Tariffs and Classifica-  
tions, and Passenger Fare Schedules, by Common Car-  
riers Wholly by Railroad or Partly by Railroad and  
Partly by Water, as Defined in Said Act.

Approved February 13, 1911. Effective March 31, 1911  
(except as noted in individual items).

### Freight Tariffs and Classifications.

\* \* \* \* \*

The term "joint rate," as used herein, is construed to  
mean a rate that extends over the lines of two or more car-  
riers and that is made by agreement between such carriers.

"Joint tariffs" are those which contain or are made up  
from such "joint rates."

\* \* \* \* \*

*Page 19.*

\* \* \* \* \*

(i) In case of change of ownership or control of a car-  
rier, the carrier whose line is absorbed, taken over, or pur-  
chased by another carrier shall unite with that other carrier  
in common supplements to the tariffs on file with the Commis-  
sion, on the one hand withdrawing and on the other hand  
accepting and establishing such tariffs and all effective (20)  
supplements thereto. Such common supplements shall be ex-  
ecuted jointly by the traffic officers of both the old and the new  
carriers, shall be numbered consecutively as supplements to  
the tariff (even if of less than five pages) to which they are  
directed, and may be made effective on five days' notice to  
the public and the Commission by noting thereon reference  
to this rule. Such common supplements will not be counted  
against the number of supplements permitted to such tariff  
under paragraph (c) of Rule 9. Amendments to such tariffs  
must thereafter be filed in consecutively numbered supple-  
ments thereto until the tariffs are reissued. New tariffs re-  
issuing or superseding these shall be numbered in the I. C. C.  
series of the new carrier.

When a road or a part of a road is transferred from the operating control of one company to that of another, or when its name is changed, the existing tariffs issued by the company that surrenders control must be withdrawn by it and adopted by the company assuming control, as provided in the preceding paragraph.

(j) As to tariffs issued by other carriers or joint agents under concurrences or powers of attorney granted by the old carrier or company, the new carrier or company shall, if it intends to use such tariff publications and rates, issue, file, and post, with I. C. C. number, an adoption notice, substantially as follows:

The (name of carrier) hereby adopts, ratifies, and makes its own, in every respect as if the same had been originally filed and posted by it, all tariffs, rules, notices, concurrences, traffic agreements, divisions, authorities, powers of attorney, or other instruments whatsoever, filed with the Interstate Commerce Commission by the (name of old carrier) prior to (date) the beginning of its possession. By this tariff it also adopts and ratifies all supplements or amendments to any of the above tariffs, etc., which it has heretofore filed with said Commission.

This notice may be made effective and be filed on immediate notice.

Similar adoption notice must be filed by a receiver when assuming possession and control of a carrier's lines.

Concurrences and powers of attorney so adopted by a carrier must, as soon as possible, be replaced and superseded by new concurrences and powers of attorney issued by and in the name of the new carrier or company, and in each instance canceling the concurrence or power of attorney superseded.

(21) The carrier surrendering control of the property has no lawful right to abandon its tariff except on lawful notice, and when it surrenders control of the property it surrenders all right to publish rates applicable thereto except under proper authority from the carrier or company to whose control the property passes. The public has a right to available and lawfully applicable rates over that property.

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*Supplement No. 3 to Tariff Circular No. 18-A. Cancels Supplement No. 2, and includes all changes to date hereof.*

## Interstate Commerce Commission

Supplement to Regulations to Govern the Construction and  
Filing of Freight Tariffs and Classifications and  
Passenger Fare Schedules.

## Administrative Rulings.

Issued by Order of Commission, February 4, 1913.  
Washington, 1913.

.....  
*Page 3.*  
.....

.....  
Paragraph (i) of Rule 9, Tariff Circular 18-A, is amended so that it will read as follows: (Adopted February 4, 1913.)

(i) In case of change of ownership or control of a carrier, or when a road or a part of a road is transferred from the operating control of one company to that of another, or when its name is changed, the carrier which will thereafter operate the road, if it intends to use the tariff publications and rates of the former operating company, shall issue, file, and post, with I. C. C. number, an adoption notice substantially as follows:

The (name of carrier) hereby adopts, ratifies, and makes its own, in every respect as if the same had been originally filed and posted by it, all tariffs, rules, notices, concurrences, traffic agreements, divisions, authorities, powers of attorney, or other instruments whatsoever, filed with the Interstate Commerce Commission by the (name of old carrier) prior to (date) the beginning of its possession. By this tariff it also adopts and ratifies all supplements or amendments to any of the above tariffs, etc., which have been heretofore filed with said Commission.

(4) This notice may be made effective and be filed on immediate notice.

Similar adoption notice must be filed by a receiver when assuming possession and control of a carrier's lines.

Concurrences and powers of attorney so adopted by a carrier must, as soon as possible, be replaced and superseded by new concurrences and powers of attorney issued by and in the name of the new carrier or company, and in each instance canceling the concurrence or power of attorney superseded.

Paragraph (j) of Rule 9, Tariff Circular 18-A, is amended so that it will read as follows: (Adopted February 4, 1913.)

(j) A carrier whose line is absorbed, taken over, or purchased by another carrier shall unite with that other carrier

in the publication and filing of common supplements to the tariffs on file with the Commission, on the one hand withdrawing, and on the other hand accepting and establishing such tariffs and all effective supplements thereto. Such common supplements shall be executed jointly by the traffic officers of both the old and new carriers, shall be numbered consecutively as supplements to the tariffs (even if of less than five pages) to which they are directed, and may be made effective on *immediate* notice to the public and the Commission by noting thereon reference to this Rule. Such common supplements will not be counted against the number of supplements permitted to such tariff under paragraph (e) of Rule 9. Amendments to such tariffs must thereafter be filed in consecutively numbered supplements thereto until the tariffs are reissued. New tariffs reissuing or superseding these shall be numbered in the I. C. C. series of the new carrier.

The carrier surrendering control of the property has no lawful right to abandon its tariffs except on lawful notice, and when it surrenders control of the property it surrenders all right to publish rates applicable thereto except under proper authority from the carrier or company to whose control the property passes. The public has a right to available and lawfully applicable rates over that property.

\* \* \* \* \*

#### Government's Exhibit 61.

INTERSTATE COMMERCE COMMISSION  
Washington, D. C.

#### REGULATIONS FOR THE TRANSPORTATION OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES BY FREIGHT AND EXPRESS AND SPECIFICATIONS FOR SHIPPING CONTAINERS.

Prescribed Under the Act of March 4, 1909, and Section 15 of the Act to Regulate Commerce as Amended June 18, 1910.

EFFECTIVE OCTOBER 1, 1914—Except as Noted Herein.

Paragraphs are numbered to correspond to the rules and regulations of the American Railway Association.

(Seal: Interstate Commerce Commission—1887.)

Washington, Government Printing Office, 1914.

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REGULATIONS FOR THE TRANSPORTATION OF  
DANGEROUS ARTICLES OTHER THAN EX-  
PLOSIVES BY FREIGHT.

Prescribed under act of March 4, 1909, and section 15 of the act to regulate commerce, as amended June 18, 1910. Revisior formulated and published July 2, 1914, effective October 1, 1914, and superseding regulations published January 2, 1912.

GENERAL NOTICE.

1701. Special precautions are necessary in preparing for shipment packages of dangerous articles other than explosives, and in handling these packages during transit. Any failure of a shipper, or of a carrier, to perform the duties imposed upon him in this respect may be the actual or a contributory cause not only of destructive fires but of disastrous explosions, since large quantities of explosives are transported frequently through thickly populated districts and in trains containing cars loaded with other dangerous articles.

1702. Sections 235 and 236 of the act of March 4, 1909, require the shipper of dangerous articles to describe and mark his packages properly and to inform the agent of the carrier of the true character of their contents. Heavy penalties are provided for the shipper who, knowingly, solicits the transportation of dangerous articles without complying with these requirements, as well as for the carrier that knowingly transports them.

1703. To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation by land in interstate commerce of dangerous articles other than explosives, the following regulations are prescribed to define these articles for freight transportation purposes, to state the precautions that must be observed by the shipper in preparing them for shipment, and by the carrier in handling them while in transit. It is the duty of each such carrier and shipper to make the prescribed regulations effective and to thoroughly instruct their employees in relation thereto.

1704. These regulations apply to all shipments of dangerous articles other than explosives, including carriers' material and supplies.

1705. Specifications as to containers, methods of packing for shipment, etc., will be considered and prescribed from time to time. Orders prescribing such specifications will be given effective dates as conditions and investigations may appear to warrant.

1706. The Bureau for the Safe Transportation of Explosives and other Dangerous Articles, hereinafter called Bureau of Explosives, organized by the railways under the auspices of the American Railway Association, is an efficient bureau in charge of an expert chief inspector. This bureau will make inspections and conduct investigations and will confer with manufacturers and shippers with a view to determining what specifications and regulations will within reasonable limits afford the highest degree of safety in packing and preparing these dangerous articles for shipment and in transporting the same. The Commission will seek to avail itself of the expert knowledge thus developed and, in formulating amendments to these regulations or specifications supplemental thereto, while not bound thereby, will give due weight to such expert opinions.

#### GENERAL RULES.

1711. Carriers that are subject to the act to regulate commerce must not receive shipments of articles defined as dangerous by these regulations when the shipments are not packed, marked, labeled, described, and certified as prescribed herein. The method of manufacture and packing of articles defined as dangerous by these regulations, so far as it affects safe transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives.

1712. All shipments of articles subject to these regulations offered for transportation in interstate commerce must be properly described by the shipper in his shipping order and bill of lading under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

The same description of contents must be marked plainly on the outside of each package.

In less-than-carload shipments each package must be marked also to show plainly the name and address of the consignee. This address, the name of contents, and the required label or "no label required" marking, should be as near together as practicable.

1713. All shipments of articles defined as dangerous by these regulations, and for which detailed instructions for pack-

ing are not given herein, must be securely packed in containers strong enough to stand without rupture or leakage of contents all ordinary shocks incident to reasonably careful handling during transit. It is the duty of shippers, where leakage from their shipping containers is known to be a probable source of fire or material damage to other freight, to exercise special care in constructing shipping containers for such articles, even though their names do not appear in the list of dangerous articles, paragraph 1807.

1714. Carriers must forward shipments of dangerous articles other than explosives promptly and within 48 hours after acceptance at originating point or receipt at transfer station or at interchange point, and consignees must remove such shipments from the carriers' property within 48 hours after notice of arrival at destination, Sundays and holidays not included.

1715. (a) *Serious violations of these regulations*, such as the discovery of leaking or broken packages of dangerous articles, *and accidents or fires* in connection with the transportation or storage on carrier's property of dangerous articles, must be reported by the carrier to the chief inspector of the Bureau of Explosives, 30 Vesey Street, New York City.

(b) Consignees should report promptly to the chief inspector, Bureau of Explosives, all instances of broken or defective containers in shipments of dangerous articles received by them.

#### SECTION I. INFORMATION AND DEFINITIONS.

1800. For transportation purposes dangerous articles other than explosives are divided into the following groups:

1. *Forbidden articles.*
2. *Acceptable articles.*

##### GROUP 1.—FORBIDDEN ARTICLES.

1801. The following are *forbidden articles*:

(a) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(b) Cylinders containing gases capable of combining chemically.

(c) Packages containing dangerous articles in a leaking condition or in such an insecure condition as to make leakage probable during transit.

(d) Rags or cotton waste oily with more than 5 per cent of vegetable or animal oil, or wet rags.

(e) Charcoal screenings from wet charcoal, or wet screenings, or screenings that have been wet. (See par. 1833 (c).)

(f) Dangerous articles not properly packed, marked, labeled, described, and certified.

(g) Iron sponge and spent oxide that has not been properly oxidized during manufacture.

## GROUP 2.—ACCEPTABLE ARTICLES.

### Definitions

#### *Inflammable Liquids—Red Label.*

1802. This group includes any liquid or liquid mixture that gives off inflammable vapors (as determined by flash point from Tagliabue's open cup tester, as used for test of burning oils) at or below a temperature of 80° F.

#### *Inflammable Solids—Yellow Label.*

1803. This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

#### *Oxidizing Materials—Yellow Label.*

1804. This group includes all substances, such as chlorates, permanganates, peroxides, and nitrates, that yield oxygen readily to stimulate the combustion of organic matter.

#### *Corrosive Liquids—White Label.*

1805. This group includes the strong mineral acids (in strength greater than one-half<sup>1</sup> concentrated, i. e., 47 per cent sulphuric, 34 per cent nitric, 20 per cent hydrochloric) and other strongly corrosive liquids that are liable to cause fires when mixed with chemicals or with organic matter, or are liable, in case of leakage from their shipping containers, to damage other freight materially.

#### *Compressed Gases—Red or Green (Gas) Label.*

1806. This group includes all inflammable or non-inflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding  $\frac{7}{8}$  inch outside diameter and of not more than 4 fluid ounces water capacity.

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

1807. (a) The following list shows the names of well-known articles in general use, other than explosives, that are

(1) For express transportation, greater than one-fourth concentrated.

dangerous; the kind of label required on outside packages; the quantities that may be shipped in one outside package without a label when certified and marked "No label required," and the label exemptions on account of specified packing. (See column 5 of list.)

(b) When a shipment described under a name not in the following list is defined as a dangerous one by paragraphs 1802 to 1806, inclusive, the shipper must inform the carrier of the fact by use of the proper label prescribed herein, and the shipping order must show the certificate prescribed by paragraph 1867. The maximum quantity of any such article shipped in one outside package, without label, when certified and marked "No label required," except as specified herein, must not exceed the limit prescribed by column 3 of the list for dangerous articles of similar flash point or characteristic.

(c) Inflammable liquids as defined by paragraph 1802, in securely closed glass, earthenware, or metal containers of not exceeding one pint capacity each, when flash point is 20° F., or lower, and of not exceeding one quart capacity when flash point is above 20° F., packed and cushioned in fiberboard or corrugated strawboard containers, wooden boxes, kegs, or barrels, complying with shipping container specifications that apply, may be shipped without labels when certified and marked "No label required."

(d) A shipment described under a definite and proper name not in the following list and on a shipping order with no notation as to labels applied and no shipper's certificate, will be assumed by the carrier in the absence of knowledge to the contrary, to be not dangerous under these regulations.

(e) When articles described under names in the following list marked (\*) are not dangerous under the regulations, the shipper must, unless otherwise provided in said list, state on his shipping order, as a part of the description of such article "No label required," and must also furnish the certificate prescribed by paragraph 1867 and mark the package "No label required."

(f) When several dangerous articles are placed in one outside package without violating these regulations, labels must be applied, when the combined quantity of the articles of any one group exceeds the lowest limit prescribed by column 3 for any of the articles of that group that are included.

(g) When dangerous articles requiring the red label are shipped in the same outside package with dangerous articles requiring yellow or white labels, the outside package must be labeled with the red label only.

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

1 Names of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	5 References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
•Acetate, amly..... Acetate, ethyl..... Acetate, methyl..... Acetone (ethyl methyl ketone). •Acid, hydrochloric (muriatic).	Inf. L..... do..... do..... do..... Cor. L.....	1 gallon..... do..... do..... do..... 5 pints (6 pounds)...	Red..... do..... do..... do..... White.....	Pars. 1807 (c), 1822, 1824 to 1827. Do. Do. Do. Pars. 1805, 1851, 1852 and 1856.
Acid, hydrofluoric..... Acid, nitrating (mixed acid). •Acid, nitric..... •Acid, sulphuric..... Alcohol..... Alcohol, denatured..... Alcohol, wood..... Ammonium perchlorate..... Barium, chlorate of..... Barium, nitrate of, in bags.....	do..... do..... do..... do..... Inf. L..... do..... do..... Oxi. M..... do..... do.....	do..... No exemption..... 5 pints (9 pounds)..... 1 gallon..... do..... do..... 25 pounds..... do..... 100 pounds (in one shipment). 25 pounds.....	do..... do..... do..... do..... Red..... do..... do..... Yellow..... do..... do.....	Pars. 1851, 1852 and 1854. Mixed nitric and sulphuric acids, par. 1858. Pars. 1805, 1851, 1852 and 1857. Pars. 1805, 1851, 1852 and 1855. Pars. 1807 (c), 1822, 1824 to 1827. Do. Do. Pars. 1822 and 1841. Do. Pars. 1822 and 1841. (See Nitrates.) Pars. 1822 and 1841.
Barium peroxide (binoxide, dioxide).	do.....	25 pounds.....	do.....	Pars. 1822 and 1841.

Benzol (benzene).....	Inf. L.....	20	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Benzine.....	do.....	†0	do.....	do.....	Do.
Bromine.....	Cor. L.....		5 pints.....	White.....	Par. 1853.
Bronzing liquid.....	Inf. L.....	0-70	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Burnt cotton.....	Inf. S.....		No exemption.	Yellow.....	Par. 1837.
Calcium phosphide.....	do.....		do.....	do.....	Par. 1835.
Carbon bisulphide.....	Inf. L.....	†0	5 pounds.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Celluloid scrap.....	Inf. S.....		No exemption.	Yellow.....	Par. 1839.
Cement, leather.....	Inf. L.....	†0	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Cement, liquid, n. o. s.....	do.....	0-80	do.....	do.....	Do.
*Cement, roofing (liquid).....	do.....	0-80	do.....	do.....	Do.
Cement, rubber.....	do.....	†0	do.....	do.....	Do.
Charcoal, wood, ground or pulverized.....	Inf. S.....		100 pounds.....	Yellow.....	(Par. 1833. Charcoal "in bottles," "in boxes," "in barrels," or "in tablets," "case-hardening charcoal," "animal charcoal," or "bone charcoal" is exempt from label and certificate requirements, when so described. Lump charcoal made by old kiln or pit method which provides long air exposure before shipment is exempt from label and placard requirements when certified and marked "No label required" or "No placard required.")
*Charcoal, wood, lump.....	do.....		2,000 pounds.....	do.....	(Par. 1833.
Charcoal, wood, screenings.....	do.....		No exemption.....	do.....	Par. 1822 and 1841.
Chlorates, n. o. s.....	Oxi. M.....		25 pounds.....	do.....	
Chloride of phosphorus.....	r. L.....		(in one shipment)	White.....	Par. 1855.
Chlorides, anhydrous, liquid.....	do.....		do.....	do.....	Do.
Chloride of sulphur.....	do.....		do.....	do.....	Pars. 1822, 1851, 1852 and 1855.
*Cleaning fluid (or liquid).....	Inf. L.....	0-80	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
*Coal tar light oil.....	do.....	0-80	do.....	do.....	Do.
*Coal-tar naphtha.....	do.....	0-80	do.....	do.....	Do.
Colloction.....	do.....	†0	do.....	do.....	Do.
Cologne spirits (alcohol).....	do.....	50	do.....	do.....	Do.
Columbian spirits (alcohol, wood).....	do.....	45	do.....	do.....	Do.

\*See paragraph 1807 (e).

†At or below.



Baugas.....	do	.....	do	.....	Red (gas) ..	Para. 1861 to 1863.
Carbonic acid.....	do	.....	do	.....	Green (gas) ..	Para. 1861 and 1862.
Chlorine.....	do	.....	do	.....	do	Do.
Coal gas.....	do	.....	do	.....	Red (gas) ..	Do.
Dental.....	do	.....	do	.....	Green (gas) ..	Do.
Hydrogen.....	do	.....	do	.....	Red (gas) ..	Para. 1861 to 1863.
Liquefied petroleum gas.....	do	.....	do	.....	do	Para. 1824 and 1861 to 1863.
Oxygen.....	do	.....	do	.....	Green (gas) ..	Para. 1861 and 1862.
Pintch.....	do	.....	do	.....	Red (gas) ..	Para. 1861 to 1863.
Sulphur dioxide.....	do	.....	do	.....	Green (gas) ..	Para. 1861 and 1862.
Compressed gases, n. o. s.....	do	.....	do	.....	Red or green (gas)	Para. 1861 to 1863.
Gas drips (hydrocarbon).....	Inf. L.....	†0	1 gallon.....	Red.....	do	Para. 1807 (c), 1822, 1824 to 1827.
Gasoline (see Note 1).....	do	†0	do	do	do	Para. 1807 (c), 1822, 1824 to 1827. Gasoline made by compressing natural gas or by blending liquefied petroleum gas with refinery gasoline or naphtha may be described and shipped as gasoline, provided the vapor pressure does not exceed 10 pounds per square inch.
High wines (alcohol).....	do	60-80	do	.....	do	Para. 1807 (c), 1822, 1824 to 1827.
*Insecticide (vermin exterminator, liquid).	do	0-80	1 gallon.....	do	do	Do.
Lacquer.....	do	0-80	do	.....	do	Para. 1807 (c), 1822, 1824 to 1827. (See Paint.)
Lead, nitrate of, in bags.....	Oxi. M.....	.....	100 pounds.....	.....	Yellow.....	Para. 1822 and 1841. (See Nitrates.)
Liquefied petroleum gas.....	Inf. L.....	†0	No exemption.....	.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Matches "Strike Anywhere".....	Inf. S.....	.....	do	.....	Yellow.....	Para. 1822 and 1836.
Naphtha.....	Inf. L.....	†0	1 gallon.....	.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
*Naphtha distillate.....	do	0-80	do	.....	do	Do.
Nitrates, in bags.....	Oxi. M.....	.....	100 pounds.....	.....	Yellow.....	Para. 1822 and 1841. Nitrates in boxes, kegs or barrels are exempt from label and certificate requirements when properly so described.

†At or below.

\*See paragraph 1807 (e).

NOTE 1.—Automobiles and motor cycles equipped with securely closed acetylene gas cylinders or tanks containing gasoline are exempt from label and certificate requirements.

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

1 Names of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	5 References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
Nitrocellulose, wet with solvent.	Inf. L. ....	No exemption.....	Red .....	Must contain not less than 30 per cent by weight of a solvent whose flash point is not lower than 40° F. and must be packed in glass bottles (par. 1824) or in securely closed metal vessels that will stand the drop tests prescribed for metal barrels. (Specification No. 6.)
Nitrocellulose or nitrostarch, wet with 20 per cent water	Inf. S. ....	do .....	Yellow.....	Par. 1834. Dry nitrocellulose and dry nitrostarch are high explosives.
•Oil, gas.....	Inf. L. ....	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
•Oil described as "Oil," or "Oil, n. o. s.," or "Petroleum oil," or "Petroleum oil, n. o. s."	do .....	do .....	do .....	Do.
Paint aluminum, bronzing or gold.	do .....	do .....	do .....	See Paint.
•Paint, liquid.....	do .....	do .....	do .....	Para. 1807 (c), 1822, 1824 to 1827. Inflammable paint, varnish, wood filler, or wood stain, liquid, in glass or earthenware vessels, or in metal cans, all packed in wooden barrels or

boxes and marked to show compliance with specifications (see par. 1822), are exempt from labels when marked and certified "No label required." Nonflammable paint is not subject to these packing requirements, but must be marked and certified "No label required." Dry paint is exempt from label and certificate requirements when properly so described.

Para. 1807 (c), 1822, 1824 to 1827.

Para. 1822 and 1841.

Do.

Do.

Para. 1807 (c), 1822, 1824 to 1827.

Do.

Do.

Para. 1822 and 1855.

Par. 1832.

Par. 1834.

do

Para. 1807 (c), 1822, 1824 to 1827.

Do.

Para. 1822 and 1841.

Do.

Para. 1822 and 1841. (See Nitrates.)

Para. 1822 and 1841.

Par. 1831.

Par. 1835.

do

do

Par. 1839.

Para. 1807 (c), 1822, 1824 to 1827.

Par. 1840.

do

Para. 1822 and 1841.

Pentane.....	do	10	1/2 gallon.....	do	Para. 1807 (c), 1822, 1824 to 1827.
Perchlorate of ammonium.....	Oxi. M.....	.....	25 pounds.....	Yellow.....	Para. 1822 and 1841.
Perchlorate of potash.....	do	.....	do	do	Do.
Pernanganate of potash.....	do	.....	do	do	Do.
Petroleum, crude (crude oil).....	Inf. L.....	0-80	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Petroleum naphtha.....	do	10	do	do	Do.
Phosphorus trichloride.....	Cor. L.....	.....	No exemption.....	White.....	Para. 1822 and 1855.
Phosphorus (white or yellow).....	Inf. S.....	.....	do	Yellow.....	Par. 1832.
Picric acid, wet with 10 per cent water.....	do	.....	do	do	Par. 1834.
Polish, metal, liquid.....	Inf. L.....	0-80	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Polish, stove, liquid.....	do	0-80	do	do	Do.
Potash, bromate.....	Oxi. M.....	.....	25 pounds.....	Yellow.....	Para. 1822 and 1841.
Potash, chlorate of.....	do	.....	do	do	Do.
Potash, nitrate of, in bags.....	do	.....	do	do	Para. 1822 and 1841. (See Nitrates.)
Potash described as "Potash" or "Potash, n. u. s.".....	do	.....	25 pounds.....	do	Para. 1822 and 1841.
Potassium, metallic.....	Inf. S.....	.....	(in one shipment)	do	Par. 1831.
Potassium sulphide (fused and ground).....	do	.....	No exemption.....	do	Par. 1835.
Pyroxylin plastic scrap.....	do	.....	do	do	do
Pyroxylin solution.....	Inf. L.....	.....	do	do	Par. 1839.
Rubber scrap, shoddy, regenerated or reclaimed rubber	Inf. S.....	0-80	1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Salt peter, in bags.....	Oxi. M.....	.....	10 pounds.....	Yellow.....	Par. 1840.
			100 pounds.....	do	Para. 1822 and 1841.
			(in one shipment)		

†At or below.

\*See paragraph 1807 (e).

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

Name of dangerous articles.	1		2		3		4		References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
	Group names and flash points—	Inf. L.—Inflammable liquid.	Inf. S.—Inflammable solid.	Oxi. M.—Oxidizing material.	Cor. L.—Corrosive liquid.	Comp. G.—Compressed gas.	Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limits prescribed for "No label required."	
Shellac, varnish.....	Inf. L.....	40-76					1 gallon.....	Red.....	See Paint.
Soda, chlorate of.....	Oxi. M.....						25 pounds.....	Yellow.....	Para. 1822 and 1841.
Soda, nitrate of, in bags.....	do.....						100 pounds..... (in one shipment)	do.....	Para. 1822 and 1841. (See Nitrates.)
Soda nitrite of.....	do.....						25 pounds.....	do.....	Para. 1822 and 1841.
Sodium, metallic.....	Inf. S.....						No exemption.....	do.....	Para. 1831.
Sodium, peroxide.....	Oxi. M.....						do.....	do.....	Para. 1822 and 1841.
Sodium sulphide (fused and ground).....	Inf. S.....						do.....	do.....	Para. 1835.
Strontia, nitrate of, in bags.....	Oxi. M.....						100 pounds..... (in one shipment)	do.....	Para. 1822 and 1841. (See Nitrates)
Sulphur, chloride of.....	Cor. L.....						No exemption.....	White.....	Para. 1822, 1851, 1852 and 1855.
Tin, bichloride, liquid.....	do.....						do.....	do.....	Para. 1855.
(tetrachloride of).									
Toluol (toluene).....	Inf. L.....	55					1 gallon.....	Red.....	Para. 1807 (c), 1822, 1824 to 1827.
Trinitrotoluol, wet with 10 per cent water.....	Inf. S.....						No exemption.....	Yellow.....	Para. 1834.
*Varnish.....	Inf. L.....	0-80					1 gallon.....	Red.....	See Paint.
Zinc fine dust.....	Inf. S.....						10 pounds.....	Yellow.....	Para. 1830.

\*See paragraph 1807 (e).

†At or below.

## SECTION II. RULES FOR PACKING.

1821. Dangerous articles for which the yellow and white labels, respectively, are prescribed must not be packed in the same package, unless the bottle containing the corrosive liquid is cushioned by incombustible absorbent material in tightly closed metal containers, as prescribed by paragraph 1851. Cylinders of compressed gases must not be packed with other articles.

1822. (a) The construction of barrels, drums, boxes, cans, carboys, or other containers purchased subsequent to March 31, 1912, and used in shipping dangerous articles other than explosives must conform to specifications approved by the Interstate Commerce Commission that apply; and each container must be stamped, labeled or marked "Complies with I. C. C. Spec'n No. —," or equivalent marking as stated in the specification.

(b) In addition to standing the tests prescribed, the design and construction of packages must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under the ordinary conditions incident to transportation. The results of experience, gained by an examination of damaged or broken packages on arrival at destination, must be reported to and recorded by the Bureau of Explosives, to the end that further use of any particular kind of package shown by experience to be inefficient may be prohibited by the Commission.

(c) Pending approval and promulgation by the Commission of specifications for types of shipping containers other than those for which specifications are published herein, containers may be used which after investigation made by the Bureau of Explosives, or by other competent testing laboratory in the presence of a representative of the Bureau of Explosives, are shown to possess the general efficiency and the protection against leakage of contents afforded by the standard types of corresponding capacity described in the specifications published herein, provided they are labeled or marked to show compliance with this requirement.

(d) Tank cars used for the shipment of dangerous articles other than explosives must comply with Master Car Builders' rules, and a tank car that leaks or one that has any defect which would make leakage during transit probable or that has not been tested and stenciled in compliance with Master Car Builders' rules must not be used for the shipment of any inflammable liquid.

(e) The tanks and their fittings must be examined by the shipper to see that they are in proper condition for loading.

Tanks must be examined for evidence of previous leaks; safety and outlet valves, dome covers and outlet-valve caps must be in proper condition before loading; after loading, tanks must not show any dropping of liquid contents at the seams or rivets, and should such dropping appear cars must be properly repaired; outlet valves must not permit more than a dropping of the liquid with valve caps off, otherwise valve must be reground and repaired. Dome covers and valve caps provided with suitable gaskets, must be properly screwed in place before cars are tendered to the carrier.

(f) Loaded tank cars tendered for shipment must be inspected by the carrier to see that they are not leaking, that the air and hand brakes, journal boxes, trucks and safety appliances are in proper condition for service, and that the car has been tested within limits prescribed by Master Car Builders' rules.

(g) Tests of all tank cars and their safety valves, as made in compliance with Master Car Builders' rules, must be certified by the party making the tests to the owner of the tank car and to the chief inspector, Bureau of Explosives; and this certification must show the initials and number of the tank car, the service for which it is suitable, the date of test, place of test, and by whom made.

#### INFLAMMABLE LIQUIDS—RED LABEL.

1824. (a) All inflammable liquids must be shipped in packages complying with specifications that apply as follows:

(b) In tightly closed metal cans of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11.

(c) In well-stoppered glass or earthenware vessels of not exceeding 1 gallon capacity, cushioned in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11, or in a well-stoppered glass or earthenware vessel of not exceeding 5 gallons capacity, well cushioned in a wooden box and not more than one such vessel in the box. The completed package must comply with swing and drop tests prescribed for boxed carboys by Specification No. 1.

(d) In well-stoppered glass, earthenware or metal vessels of not exceeding 1 pint capacity when flash point is 20° F., or lower, and 1 quart capacity when flash point is above 20° F., cushioned in fiber board or corrugated strawboard containers complying with Specification No. 24.

(e) In wooden kits of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2, or cushioned in wooden barrels or kegs complying with Specification No. 11.

(f) In metal-jacketed cans of not exceeding 10 gallons capacity, complying with Specification No. 23.

(g) In well-stoppered carboys of not exceeding 13 gallons capacity, cushioned in wooden boxes complying with Specification No. 1.

(h) In wooden barrels or kegs complying with Specification No. 10 when the flash point of the liquid is not lower than 20° F., or in wooden barrels or kegs complying with Specification No. 9 when the flash point is lower than 20° F., unless otherwise provided in the tariffs under which shipment moves.

(i) In metal barrels or drums complying with Specification No. 5.

(j) In tank cars complying with Master Car Builders' specifications, provided the vapor tension of the inflammable liquid corresponding to a temperature of 100° F. (90° F. Nov. 1 to Mar. 1) does not exceed 10 pounds per square inch. After January 1, 1915, a tank car must not be used for shipping inflammable liquids with flash point lower than 20° F., unless it has been tested with cold-water pressure of 60 pounds per square inch and stenciled as required by Master Car Builders' rules.

(k) Liquefied petroleum gas is a condensate from the "casing-head gas" of petroleum oil wells, whose vapor tension at 100° F. (90° F. Nov. 1 to Mar. 1) exceeds 10 pounds per square inch. Liquefied petroleum gas must be shipped in metal drums or barrels which comply with Specification No. 5, or in tank cars especially constructed and approved for this service by the Master Car Builders' Association. When the vapor pressure at 100° F. exceeds 25 pounds per square inch, cylinders as prescribed for compressed gases (see pars. 1861 to 1863, inclusive) must be used.

(l) Carbon bisulphide in interior packages of capacity greater than  $\frac{1}{2}$  gallon must be shipped in metal cans of not less than 28 gauge, boxed, complying with Specification No. 2; or in metal barrels or drums complying with Specification No. 5, such barrels or drums after January 1, 1916, not to exceed 55 gallons capacity. Carbon bisulphide may also be shipped in tank cars complying with paragraph 1824 (j).

1825. (a) Packages containing inflammable liquids must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers, due to

increase of temperature during transit. In all such packages, this vacant space must not be less than 2 per cent of the total capacity of the container. In tank cars the vacant space must not be less than 2 per cent of the total capacity of the tank, i. e., the shell and dome capacity, combined. If the dome of tank cars does not provide this 2 per cent, sufficient vacant space must be left in the shell of the tank to make up the difference.

(b) In packages containing alcohol, cologne spirits, high wines or other distilled spirits, the vacant interior space or allowance for wantage or ullage must conform to the United States Internal Revenue Regulations.

1826. Interior packages, containing 1 quart or more of an inflammable liquid, must be packed with their filling holes up and the top of the outside package must be plainly marked "THIS SIDE UP."

1827. Wooden-jacketed cans and wooden kits must not be used for the shipment of inflammable liquids, except as inside containers as provided by Specification No. 2 or 11.

#### LABELS.

1864. (a) Unless exempted on account of quantity or method of packing (see columns 3 and 5, list, par. 1807), all packages containing dangerous articles named in the list, paragraph 1807, and similar articles defined by paragraphs 1802 to 1806, inclusive, must be conspicuously labeled by the shipper. Labels should be applied when practicable to that part of the package bearing the consignee's name and address.

(b) Labels will not be required on packages in carload shipments to be unloaded by the consignee, but the proper placards must be obtained from the carrier and applied by the shipper to the car loaded by him. When it is known, however, that subsequent shipments of these packages in less-than-carload quantities, and in the original outside packages, will probably be made by the consignee, the original manufacturing shipper should attach labels to the packages.

(c) Shippers must furnish and attach the labels prescribed for their packages. Labels must not be applied to packages containing articles which are not subject to these regulations, nor to packages which are exempt from labels on account of quantity or method of packing. (See columns 3 and 5, list, par. 807.) Packages containing articles which are subject to these regulations and which are exempt from labels, must be plainly marked "NO LABEL REQUIRED."

(d) Containers shipped as "EMPTY" (except in carload shipments to be unloaded by consignee) must have the

old red, yellow, white, or green labels removed or completely covered by a square white label measuring not less than 6 inches in each side, and bearing thereon the word "EMPTY" in letters not less than 1 inch high.

1865. Labels must be of diamond shape, with each side 4 inches long. The color is *red* for inflammable liquids and compressed inflammable gases, *yellow* for inflammable solids and oxidizing materials, *green* for noninflammable compressed gases, and *white* for corrosive liquids. Labels must conform to standards as to size, printing, and color, and samples will be furnished, on request, by the chief inspector of the Bureau of Explosives, 30 Vesey street, New York City.

1866. The wording must be in black letters inside of a black line border measuring  $3\frac{1}{2}$  inches on each side, and as follows:<sup>1</sup>



Red label for inflammable liquids. (Reduced size.)

(1) The carrier's name and form number, or the shipper's name and address, may be printed on the labels, in type not larger than 10 point, if placed within the black line border and in the upper or lower corner of the diamond.



Yellow label for inflammable solids and oxidizing materials. (Reduced size.)

#### SHIPPING ORDERS.

1867. (a) Any article subject to these regulations whether label is required or not, must be described on the shipping order under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

(b) The shipping order must also show opposite the entry of the article the kind of label applied, or "No label required." For carload lots of such articles loaded by the shipper, the shipping order must show the kind of placard applied to the car, or "No placard required."

(c) The shipping order must also show the following certificate in the lower left-hand corner over the written or stamped facsimile signature of the shipper or of his duly authorized agent:

This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the

regulations prescribed by the Interstate Commerce Commission.

(d) A shipping order that does not cover the shipment of an article classed as dangerous or doubtful by these regulations must not show thereon the label notation or the certificate prescribed for dangerous articles. Unnecessary certificates and label notations on shipping-order blanks must be canceled by the shipper.

(e) Whenever orders are placed in foreign countries for the importation of dangerous articles to be forwarded from port of entry by rail, the importer must furnish with the order to the foreign shipper and also to the forwarding agent at the port of entry, full and complete information as to the necessary packing, marking, and labeling required by these regulations. The forwarding agent must file with the originating carrier a certified shipping order and must see that the packages are properly packed, marked, and labeled.

#### WAYBILLING.

1873. The revenue or other waybill prepared from the shipping order, and transfer billing to connecting carrier for dangerous articles in list, paragraph 1807 and for other articles not in the list, but properly offered for shipment as dangerous articles, must properly describe these articles by classification or tariff name and state for less-than-carload shipments the color of label applied. For carload shipments they must show the kind of placard applied. The shipper's certificate must be in possession of the initial carrier when these indorsements are made on original billing.

The revenue waybill must also have plainly stamped or written at the top the words "INFLAMMABLE" or "ACID."

#### PLACARDS AND HANDLING CARS.

1901. Carriers must keep on hand an adequate supply of placards. Placards will be furnished by carriers to shippers for attachment to cars loaded by them.

1902. The carrier must verify the attachment of the proper placard by the shipper, as soon as a car requiring a placard is accepted by the carrier for transportation. A daily record showing the initials and numbers of all cars placarded must be kept on file at originating and transfer stations.

1903. (a) When the lading requiring the placard is removed from cars placards must be removed, except that "IN-

FLAMMABLE" placards must remain on *tank* cars moved as "empty" until such cars are known to have been properly cleaned with steam or reloaded with a substance that does not require the placard. As provided in paragraph 1941 (b) acid placards which are painted or stenciled on tank cars may be allowed to remain.

(b) Many fatal accidents have resulted from using lanterns or lighted matches to examine the interior of empty tank cars or in using hot rivets to repair unsteamed tank cars, which may contain inflammable vapors even when the previous lading was not of flash point below 80° F. Only incandescent electric lights should be used for this examination.

(c) Dome covers on empty tank cars must be securely placed in proper position before the cars are offered for movement.

1904. A carrier must not move from a station, yard, or siding a car known to require placards until the proper placards are attached. Placards lost in transit must be replaced by the carrier.

1905. (a) Tank cars placarded "INFLAMMABLE" must be placed in trains, if possible, at least 5 cars from the engine and 5 cars from the caboose, but must not be placed next to a car placarded "EXPLOSIVES." When length of train does not permit this, they must be placed as near the middle of the train as practicable; and in all cases carriers must see that their train crews are informed of the presence and location of such cars in the train.

Special care must be taken to avoid rough treatment and unnecessary switching of placarded tank cars.

(b) The carrier must see that its representative in charge of a freight train makes a thorough check of the cars bearing inflammable, acid, or explosive placards, with the billing, to see that all placards required are attached and those not required are removed.

1906. When cars protected by "INFLAMMABLE" placards are received or held in yards, particularly at night, the carrier must see that all necessary precautions are taken to prevent accidents. These precautions must include provision for quickly isolating them in case of fire.

1907. In classification yards, and in switching, it must be determined by inspection and trial that such a car has its brakes in first-class order before a draft containing it is cut; and a tank car placarded "INFLAMMABLE" must not be started down a ladder track, incline, or hump until the pre-

ceding car has cleared the ladder. It also must clear the ladder before another car is allowed to follow.

1908. (a) Cars bearing "INFLAMMABLE" placards and cars adjacent to them must be watched with extra care to discover hot journals.

(b) All available opportunities must be utilized, by noting the odor of inflammable liquids or otherwise, to discover leaks in these cars and to protect leaking cars from ignition of contents by flame of inspectors' lanterns or torches, by burning fuses, by switch lights, by switchthawing flames, by fires on side of track, by coals from locomotives passing over a roadbed strewn with leakage, or otherwise. (See par. 1956.)

1909. Whenever a tank car, loaded with an inflammable liquid, is discovered in transit in a leaking condition, all unnecessary movement of the car must cease until the unsafe condition of the car is remedied. Every possible precaution necessary to prevent ignition of the contents must be observed and the general precautions indicated in paragraphs 1951 to 1957, inclusive, should be followed.

1912. In unloading tank cars the following rules should be observed:

(a) The dome cover should be unscrewed by placing a bar between the dome-cover lug and the knob; the valve-rod handle in the dome should be moved back and forth a few times, to ascertain if the valve is properly seated, and if seated, the valve cap should then be removed with a suitable wrench, having a pail to catch any liquid that may be in the valve nozzle.

(b) The unloading connection should be securely attached to the valve nozzle, and valve should then be raised by working the valve-rod handle. The dome cover should be placed over the dome opening, resting on a piece of wood, to allow air to enter the tank. The dome cover should not be replaced while unloading, as this action may result in collapse of the tank. After tank is unloaded the valve should be seated, valve cap and dome cover replaced. "INFLAMMABLE" placards must not be removed.

(c) When necessary to unload tank cars from the dome, or when necessary to transfer the contents of one tank car through the outlet valve into the dome of another tank car, care should be observed to see that all of the connections are tight and that the pipe or hose, when inserted into the open manhole for pumping or filling purposes, is surrounded by wet burlap to prevent the escape of vapors and to avoid igniting them.

### INFLAMMABLE PLACARD.

1913. A placard of diamond shape, printed on strong, thin, white paper for pasting on tank cars, containing an inflammable liquid and on strong tag board for tacking to wooden cars or to wooden boards of suitable size attached for this purpose to metal box cars or tank cars, measuring  $10\frac{3}{4}$  inches on each side, and bearing in red and black letters the following inscription, must be securely attached to each outside end and to each side door of a car containing one or more packages protected by the *red* or the *yellow* diamond label:



Inflammable placard. (Reduced size.)

### IN CASE OF A WRECK.

1946. In case of a wreck involving a car containing inflammable freight it should be assumed that packages are broken and that leakage has occurred which may cause fire if lighted lanterns or other flames are taken into or near these cars. As much of the train as possible should be moved to a place of safety. A car containing inflammable freight should be opened for ventilation and packages protected by red labels

and cylinders of compressed gases should be removed to a safe place. Substances spilled from broken packages protected by yellow label should also be carefully removed. Cylinders of compressed gases may be exploded if they are exposed to fire or struck a sharp blow and the flying fragments would then be dangerous. Inflammable liquids spilled from broken packages or tank cars should be well covered with dry earth before a lighted lantern, torch, or an engine is used in the vicinity. Acids spilled in cars should be covered with dry earth and the car floors should be thoroughly swept.

#### LEAKING TANK CARS.

1951. Action in any particular case will depend upon existing conditions, and good judgment will be necessary to avoid disastrous fires on the one hand and the useless sacrifice of valuable property on the other.

Volatile (or combustible) liquids, such as gasoline, naphtha, etc., in large quantity and spread over a large surface will form vapors that will ignite at a considerable distance, depending on the kind and quantity of liquid and the direction and force of the wind. Many of the liquids, regarded as safe to carry under ordinary conditions and transported in tank cars without the inflammable placard, should still be treated as dangerous in handling a wreck.

1952. When oil cars are leaking all lights or fires near them that can possibly be dispensed with should be extinguished or removed. Incandescent electric lights or portable electric flashlights should be used when available. Whenever practicable the work of handling a wrecked oil car should be done during daylight.

1953. Lanterns necessarily used for signaling should be kept on the side from which the wind is blowing and at as high an elevation as can be obtained. The vapors will go with the wind but not against it. The ash pan and fire box of a locomotive or steam derrick, especially on the side of a wrecked or leaking tank car toward which the wind is blowing, is a source of danger. Wrecks involving oil cars should in no case be approached with lighted pipes, cigars, or cigarettes.

1954. Effort should be made to prevent the spread of oil over a large surface by collecting it in any available vessels or draining it into a hole or depression at a safe distance from the track. When necessary, trenches should be dug for this purpose.

It is not safe to drain inflammable oil in large quantities into a sewer, since vapors may thus be carried to distant points and there ignited. Care should be exercised also not to permit oil to drain into streams of water which may be used by irrigation plants or for watering stock. Dry earth spread over spilled oil will decrease the rate of evaporation and the danger. A stream of oil on the ground should be dammed and dry earth be thrown on the liquid as it collects.

1955. Sudden shocks or jars that might produce sparks or friction should be avoided. When possible, jack the wrecked cars carefully into position after removing other cars and freight that might be injured by fire. Only as a last resort, to meet an emergency, should a wrecked tank car be moved by dragging, and when this is done all persons should be kept at a safe distance.

1956. No unnecessary attempt should be made to transport a damaged tank car from which inflammable liquid is leaking. Safety in short movements may be secured by attaching a vessel under small leaks to prevent spread of inflammable liquid over tracks. Cover tracks at intervals in rear of a moving car with fresh earth to prevent fire overtaking the car. Keep engines away; also spectators who may be smoking. If wrecked or derailed, and not in a position to obstruct or endanger traffic, it should have its leak stopped as far as possible and be left under guard until another tank car or sufficient vessels can be provided for the transfer of the liquid, which should be transferred by pumping when practicable.

Even a tank that is not leaking is liable to be ruptured by use of slings, and the slipping of chain slings may produce sparks. Saving of the contents of the tank is not as important as the prevention of fire.

1957. An empty or partially empty tank car, with or without placards, is very liable to contain explosive gases, and lights must not be brought near it.

1958. *Water will not quench an oil fire.*—If the fire can not be smothered by use of earth, steam, or wet blankets, effort should be concentrated on confining it and saving other property.

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**Government's Exhibit 62.**

**INTERSTATE COMMERCE COMMISSION**

Washington, D. C.

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**REGULATIONS FOR THE TRANSPORTATION OF EX-  
PLOSIVES AND OTHER DANGEROUS ARTICLES  
BY FREIGHT AND EXPRESS AND SPECIFICA-  
TIONS FOR SHIPPING CONTAINERS.**

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Prescribed Under the Act of March 4, 1909, and Section 15 of  
the Act to Regulate Commerce as Amended.

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REVISED JULY 15, 1918—Effective as Noted Herein.

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Paragraphs are numbered to correspond to the rules and  
regulations of the American Railway Association.

(Seal: Interstate Commerce Commission—1887.)

Washington, Government Printing Office, 1918.

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REGULATIONS FOR THE TRANSPORTATION OF  
DANGEROUS ARTICLES OTHER THAN EX-  
PLOSIVES BY FREIGHT.

Prescribed under act of March 4, 1909, and section 15 of the act to regulate commerce, as amended June 18, 1910. Revision formulated and published July 2, 1914, effective October 1, 1914, and superseding regulations published January 1, 1912. Further revision formulated and published July 15, 1918, effective September 1, 1918, superseding the regulations published July 2, 1914.

GENERAL NOTICE.

1701. Special precautions are necessary in preparing for shipment packages of dangerous articles other than explosives, and in handling these packages during transit. Any failure of a shipper, or of a carrier, to perform the duties imposed upon him in this respect may be the actual or a contributory cause not only of destructive fires but of disastrous explosions, since large quantities of explosives are transported frequently through thickly populated districts and in trains containing cars loaded with other dangerous articles.

1702. Sections 235 and 236 of the act of March 4, 1909, require the shipper of dangerous articles to describe and mark his packages properly and to inform the agent of the carrier of the true character of their contents. Heavy penalties are provided for the shipper who knowingly solicits the transportation of dangerous articles without complying with these requirements, as well as for the carrier that knowingly transports them.

1703. To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation by land in interstate commerce of dangerous articles other than explosives, the following regulations are prescribed to define these articles for freight transportation purposes, to state the precautions that must be observed by the shipper in preparing them for shipment, and by the carrier in handling them while in transit. It is the duty of each such carrier and shipper to make the prescribed regulations effective and to thoroughly instruct their employees in relation thereto.

1704. These regulations apply to all shipments of dangerous articles other than explosives, including carriers' material and supplies.

1705. Specifications as to containers, methods of packing for shipment, etc., will be considered and prescribed from time to time. Orders prescribing such specifications will be given effective dates as conditions and investigations may appear to warrant.

1706. The Bureau for the Safe Transportation of Explosives and other Dangerous Articles, hereinafter called Bureau of Explosives, organized by the railways under the auspices of the American Railway Association, is an efficient bureau in charge of an expert chief inspector. This bureau will make inspections and conduct investigations and will confer with manufacturers and shippers with a view to determining what specifications and regulations will within reasonable limits afford the highest degree of safety in packing and preparing these dangerous articles for shipment and in transporting the same. The Commission will seek to avail itself of the expert knowledge thus developed and, in formulating amendments to these regulations or specifications supplemental thereto, while not bound thereby, will give due weight to such expert opinions.

### GENERAL RULES.

1711. Carriers that are subject to the act to regulate commerce must not receive shipments of articles defined as dangerous by these regulations when the shipments are not packed, marked, labeled, described, and certified as prescribed herein. The method of manufacture and packing of articles defined as dangerous by these regulations, so far as it affects safe transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives.

1712. All shipments of articles subject to these regulations offered for transportation in interstate commerce must be properly described by the shipper in his shipping order and bill of lading under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing.

The same description of contents must be marked plainly on the outside of each package. Tank cars must bear thereon a card showing proper name of contents.

In less-than-carload shipments each package must be

marked also to show plainly the name and address of the consignee. This address, the name of contents, and the required label or "no label required" marking, should be as near together as practicable.

1713. All shipments of articles defined as dangerous by these regulations, and for which detailed instructions for packing are not given herein, must be securely packed in containers strong enough to stand without rupture or leakage of contents all ordinary shocks incident to reasonably careful handling during transit. It is the duty of shippers, where leakage from their shipping containers is known to be a probable source of fire or material damage to other freight, to exercise special care in constructing shipping containers for such articles, even though their names do not appear in the list of dangerous articles, paragraph 1807.

1714. Carriers must forward shipments of dangerous articles other than explosives promptly and within 48 hours after acceptance at originating point or receipt at transfer station or at interchange point, and consignees must remove such shipments from the carrier's property within 48 hours after notice of arrival at destination, Sundays and holidays not included.

1715. (a) *Serious violations of these regulations*, such as the discovery of leaking or broken packages of dangerous articles, and accidents or fires in connection with the transportation or storage on carrier's property of dangerous articles, must be reported promptly by the carrier to the chief inspector of the Bureau of Explosives, 30 Vesey Street, New York City.

(b) Consignees should report promptly to the chief inspector, Bureau of Explosives, all instances of broken or defective containers in shipments of dangerous articles received by them.

1716. Containers that have been previously used for dangerous articles other than explosives, must have the old marks and labels removed before being used for the shipment of other articles.

## SECTION 1. INFORMATION AND DEFINITIONS.

1800. For transportation purposes dangerous articles other than explosives are divided into the following groups:

1. *Forbidden articles.*
2. *Acceptable articles.*

## GROUP 1.—FORBIDDEN ARTICLES.

1801. The following are *forbidden articles*:

(a) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(b) Cylinders containing gases capable of combining chemically.

(c) Packages containing dangerous articles in a leaking condition or in such an insecure condition as to make leakage probable during transit.

(d) Rags or cotton waste oily with more than 5 per cent of vegetable or animal oil, or wet rags, or wet textile waste, or wet paper stock.

(e) Charcoal screenings from wet charcoal, or wet screenings, or screenings that have been wet. (See par. 1833 (c).)

(f) Dangerous articles not properly packed, marked, labeled, described, and certified.

(g) Iron sponge that has not been properly oxidized during manufacture; and spent oxide or spent iron mass except when loaded in open steel cars.

## GROUP 2—ACCEPTABLE ARTICLES.

## Definitions.

*Inflammable Liquids—Red Label*

1802. This group includes any liquid or liquid mixture that gives off inflammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 80° F.

*Inflammable Solids—Yellow Label*

1803. This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

*Oxidizing Materials—Yellow Label*

1804. This group includes all substances, such as chlorates, permanganates, peroxides, and nitrates, that yield oxygen readily to stimulate the combustion of organic matter.

*Corrosive Liquids—White Label*

1805. This group includes the strong mineral acids (in strength greater than one-half<sup>1</sup> concentrated, i. e., 47 per cent sulphuric, 34 per cent nitric, 20 per cent hydrochloric) and other strongly corrosive liquids that are liable to cause fires when mixed with chemicals or with organic matter, or are liable in case of leakage from their shipping containers, to damage other freight materially.

*Compressed Gases—Red or Green (Gas) Label*

1806. This group includes all inflammable or noninflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding seven-eighths inch outside diameter and of not more than 4 fluid ounces water capacity.

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

1807. (a) The following list shows the names of well-known articles in general use, other than explosives, that are dangerous; the kind of label required on outside packages; the quantities that may be shipped in one outside package without a label when certified and marked "No label required," and the label exemptions on account of specified packing. (See column 5 of list.)

(b) When a shipment described under a name not in the following list is defined as a dangerous one by paragraphs 1802 to 1806, inclusive, the shipper must inform the carrier of the fact by use of the proper label prescribed herein, and the shipping order must show the certificate prescribed by paragraph 1867. The maximum quantity of any such article shipped in one outside package without label, when certified and marked, "No label required," except as specified herein, must not exceed the limit prescribed by column 3 of the list for dangerous articles of similar flash point or characteristics.

(c) Inflammable liquids as defined by paragraph 1802, in securely closed glass, earthenware, or metal containers of not exceeding 1 pint capacity each (ether 1 1/10 pounds), when flash point is 20° F., or lower, and of not exceeding one quart capacity when flash point is above 20° F., packed and cushioned in fiber board or corrugated strawboard containers, wooden boxes, kegs, or barrels, complying with shipping con-

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NOTE—Hand fire extinguishers containing non-liquefied gas for the purpose of expelling fire-extinguishing contents are excepted.

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(1) For express transportation, greater than one-fourth concentrated.

tainer specifications that apply, may be shipped without labels when certified and marked "No label required."

(d) A shipment described under a definite and proper name not in the following list and on a shipping order with no notation as to labels applied and no shipper's certificate, will be assumed by the carrier in the absence of knowledge to the contrary, to be not dangerous under these regulations.

(e) When articles described under names in the following list marked with (\*) are not dangerous under the regulations, the shipper must, unless otherwise provided in said list, state on his shipping order, as a part of the description of such article, for less than carloads, "No label required," and for carloads, state on his shipping order "No placard required," and must also furnish the certificate prescribed by paragraph 1867 and mark the packages "No label required."

(f) When several dangerous articles are placed in one outside package without violating these regulations, labels must be applied, when the combined quantity of the articles of any one group exceeds the lowest limit prescribed by column 3 for any of the articles of that group that are included.

(g) When dangerous articles requiring the red label are shipped in the same outside package with dangerous articles requiring yellow or white labels, the outside package must be labeled with red label only.

## LIST OF PRINCIPAL DANGEROUS ARTICLES.

1	2	3	4	5
Names of dangerous articles.	Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G. — Compressed gas.	Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limits prescribed for "No label required."	References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
*Acetate, amyl.....	Inf. L.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Acetate, ethyl.....	do.....	do.....	do.....	Do.
Acetate, methyl.....	do.....	do.....	do.....	Do.
Acetone.....	do.....	do.....	do.....	Do.
*Acid hydrochloric (muriatic).....	Cor. L.....	5 pints (6 pounds).....	White.....	Pars. 1805, 1851, 1852, and 1856.
Acid hydrofluoric.....	do.....	do.....	do.....	Pars. 1805, 1851, 1852, and 1854.
Acid hydrofluosilicic.....	do.....	do.....	do.....	Do.
Acid, nitrating (mixed acid).....	do.....	No exemption.....	do.....	Mixed nitric and sulphuric acids, par. 1858.
*Acid, nitric.....	do.....	do.....	do.....	Pars. 1805, 1851, 1852, and 1857.
*Acid, sulphuric (oil of vitriol).....	do.....	5 pints (9 pounds).....	do.....	Pars. 1805, 1851, 1852, and 1856.
Alcohol.....	Inf. L.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Alcohol, denatured.....	do.....	do.....	do.....	Do.
Alcohol, wood.....	do.....	do.....	do.....	Do.
Ammonium perchlorate.....	Oxi. M.....	25 pounds.....	Yellow.....	Pars. 1822 and 1841.
Barium, chlorate of.....	do.....	do.....	do.....	Do.
Barium, nitrate of, in bags.....	Oxi. M.....	100 pounds (in one shipment).....	do.....	Pars. 1822 and 1841. (See Nitrates.)
Barium peroxide (binioxide, dioxide).....	do.....	25 pounds.....	do.....	Pars. 1822 and 1841.
Benzol (benzene).....	Inf. L.....	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Benzine.....	do.....	do.....	do.....	Do.

Bromine.....	Cor. L.....	.....	5 pints.....	White.....	Par. 1853.
Bronzing liquid.....	Inf. L.....	0-70.....	1 gallon.....	Red.....	Par. 1807 (c), 1822, 1824 to 1827.
Burnt cotton.....	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1837.
Calcium phosphide.....	do.....	.....	do.....	do.....	Par. 1835.
Carbon bisulphide.....	Inf. L.....	†0.....	5 pounds.....	Red.....	Par. 1807 (c), 1822, 1824 to 1827.
Cashinghead gasoline.....	do.....	†0.....	1 gallon.....	do.....	Do.
Cashinghead naphtha.....	do.....	†0.....	do.....	do.....	Do.
Celluloid scrap.....	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1839.
Cement, leather.....	Inf. L.....	†0.....	1 gallon.....	Red.....	Par. 1807 (c), 1822, 1824 to 1827.
*Cement, liquid, n. o. s.....	do.....	0-80.....	do.....	do.....	Do.
*Cement, roofing (liquid).....	do.....	0-80.....	do.....	do.....	Do.
Cement, rubber.....	do.....	†0.....	do.....	do.....	Do.
Charcoal, wood, ground, crushed, granulated or pulverized.....	Inf. S.....	.....	100 pounds..... (in one shipment).	Yellow.....	(Par. 1833, Charcoal "in bottles," "in boxes," "in barrels," or "in tablets," "case-hardening charcoal," "animal charcoal," or "bone char- coal" is exempt from label and certificate requirements, when so described. Lump charcoal made by old kiln or pit method which provides long air exposure before shipment is exempt from label and placard requirements when certified and marked "No label required" or "No placard re- quired.")
*Charcoal, wood, lumpy.....	do.....	.....	2,000 pounds..... (in one shipment).	do.....	Par. 1833.
Charcoal, wood, screenings.....	do.....	.....	No exemption.....	do.....	Par. 1822 and 1841.
Chlorates, n. o. s.....	Oxi. M.....	.....	25 pounds..... (in one shipment).	do.....	Par. 1855 (b).
Chloride of phosphorus.....	Cor. L.....	.....	No exemption.....	White.....	Do.
Chlorides, anhydrous, liquid.....	do.....	.....	do.....	do.....	Par. 1822, 1851, 1852, and 1855.
Chloride of sulphur.....	do.....	.....	do.....	do.....	Par. 1822 and 1841 (e).
Chromic acid.....	Oxi. M.....	.....	25 pounds (in one shipment).....	Yellow.....	Par. 1807 (c), 1822, 1824 to 1827.
*Cleaning fluid (or liquid).....	Inf. L.....	0-80.....	1 gallon.....	Red.....	Do.
*Coal-tar light oil.....	do.....	0-80.....	do.....	do.....	Do.
*Coal-tar oil.....	do.....	0-80.....	do.....	do.....	Do.
*Coal-tar naphtha.....	do.....	0-80.....	do.....	do.....	Do.
Cobalt resinate, precipitated.....	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1840 (b).
	Inf. L.....	†0.....	1 gallon.....	Red.....	Par. 1807 (c), 1822, 1824 to 1827.

†At or below.

\*See paragraph 1807 (e).

## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

1 Names of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid Comp. G.—Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	5 References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
Collodion..... Cologne spirits (alcohol)..... Columbian spirits (alcohol, wood). *Compounds, paint or varnish removing, liquid. *Compounds, polishing, liquid *Compounds, type cleansing, liquid. *Compounds, vulcanizing..... *Compounds, vulcanizing..... *Distillate..... *Dressing, leather..... *Driers, paint or Japan..... *Electrolyte..... *Eradicators, paint or grease, liquid. Ether..... *Extracts, liquid (flavoring).....	Inf. L..... do ..... do ..... do ..... do ..... do ..... Cor. L..... Inf. L..... do ..... do ..... Cor. L..... Inf. L..... do ..... do .....	1 gallon..... do ..... do ..... do ..... do ..... do ..... do ..... do ..... do ..... do ..... 5 pints (9 pounds)..... 1 gallon..... 5 pounds..... 1 gallon.....	Red..... do ..... do ..... do ..... do ..... do ..... do ..... White..... Red..... do ..... do ..... White..... Red..... do ..... do .....	Pans. 1807 (c), 1823, 1824 to 1827. Do. Do. Pans. 1807 (c), 1823, 1824 to 1827. Do. Do. Do. Pans. 1822, 1851, 1852, and 1855. Pans. 1807 (c), 1822, 1824 to 1827. Do. Do. Pans. 1805, 1851, 1852, and 1855. Pans. 1807 (c), 1822, 1824 to 1827. Do. Pans. 1807 (c), 1822, 1824 to 1827.



## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

Names of dangerous articles.	Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	Kind of label required when quantity exceeds the limits prescribed for "No label required."	References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
1	2	3	4	5
Liquefied petroleum gas..... Matches "Strike Anywhere". Naphtha..... •Naphtha distillate..... Nitrates, in bags.....	Inf. L..... Inf. S..... Inf. L..... do..... Oxi. M.....	No exemption..... do..... 1 gallon..... do..... 100 pounds..... (In one shipment).	Red..... Yellow..... Red..... do..... Yellow.....	Pars. 1807 (c), 1822, 1824 to 1827. Pars. 1822 and 1836. Pars. 1807 (c), 1822, 1824 to 1827. Do. Pars. 1822 and 1841. Nitrates in boxes, kegs, or barrels are exempt from label and certificate requirements when properly so described.
Nitrocellulose, wet with solvent.	Inf. L.....	No exemption.....	Red.....	Must contain not less than 30 per cent by weight of a solvent whose flash point is not lower than 40° F. and must be packed in glass bottles (par. 1824) or in securely closed metal vessels that will stand the drop tests prescribed for metal barrels. (Specification No. 5.)
Nitrocellulose or nitrostarch, wet with 20 per cent water •Oil, gas..... •Oil described as "Oil," or "Oil, n. o. s.," or "Petroleum"	Inf. S..... Inf. L..... do.....	do..... 1 gallon..... do.....	Yellow..... Red..... do.....	Par. 1834. Dry nitrocellulose and dry nitrostarch are high explosives. Pars. 1807 (c), 1822, 1824 to 1827. Do.



## LIST OF PRINCIPAL DANGEROUS ARTICLES—Continued.

1 Names of dangerous articles.	2 Group names and flash points— Inf. L.—Inflammable liquid. Inf. S.—Inflammable solid. Oxi. M.—Oxidizing material. Cor. L.—Corrosive liquid. Comp. G.—Compressed gas.	3 Maximum quantity in one outside package which may be shipped without a label when marked and certified "No label required."	4 Kind of label required when quantity exceeds the limits prescribed for "No label required."	5 References for packing requirements, paragraph numbers, remarks for information, and rules for exceptions of similar articles.
Potash, nitrate of..... • Potash described as "Potash," or "Potash, n. o. s." Potassium, metallic..... Potassium sulphide (fused, chipped or concentrated) Pyroxylin plastic scrap..... Pyroxylin solution..... • Pyroxylin solvent n. o. s..... Resinates, precipitated of cobalt • Rubber scrap, shoddy, regenerated or reclaimed rubber Salt peter, in bags..... Shellac, varnish..... Soda, chlorate of..... Soda, nitrate of, in bags..... Soda, nitrite of..... Sodium, metallic.....	Oxi. M..... do..... Inf. S..... do..... do..... Inf. L..... do..... Inf. S..... do..... Oxi. M..... Inf. L..... Oxi. M..... do..... do..... Inf. S.....	25 pounds..... 25 pounds..... (in one shipment) No exemption..... do..... do..... 1 gallon..... do..... No exemption..... 10 pounds..... 100 pounds..... (in one shipment) 1 gallon..... 25 pounds..... 100 pounds..... (in one shipment) 25 pounds..... No exemption.....	Yellow..... do..... do..... do..... do..... Red..... do..... Yellow..... do..... do..... Red..... Yellow..... do..... do..... do.....	Pars. 1822 and 1841 Pars. 1822 and 1841. Par. 1831. Par. 1835. Par. 1839. Pars. 1807 (c), 1822, 1824 to 1827. Do. Par. 1840 (b). Rubber scrap not ground is exempt from label and certificate requirements, when properly so described. Pars. 1822 and 1841. See Paint. Pars. 1822 and 1841. Pars. 1822 and 1841. (See Nitrates.) Pars. 1822 and 1841. Par. 1831.

Sodium peroxide.....	Oxi. M.....	.....	No exemption.....	Yellow.....	Pars. 1822 and 1841.
*Sodium sulphide (fused, chipped, or concentrated)	Inf. S.....	.....	do .....	do .....	Par. 1835.
*Solvent, gum or pyroxylin, n. o. s.	Inf. L.....	0-80	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Strontia, nitrate of, in bags..	Oxi. M.....	.....	100 pounds..... (in one shipment)	Yellow.....	Pars. 1822 and 1841. (See Nitrates.)
Sulphur, chloride of.....	Cor. L.....	.....	No exemption.....	White.....	Pars. 1822, 1852 and 1855.
Tetra-nitroaniline, wet with 20 per cent water.	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1834.
Tetra-nitromethylaniline, wet with 20 per cent water.	do .....	.....	do .....	do .....	Do.
Tin, bichloride, liquid (te- trachloride of).	Cor. L.....	.....	do .....	do .....	Par. 1855.
Toluol (toluene).....	Inf. L.....	55	1 gallon.....	Red.....	Pars. 1807 (c), 1822, 1824 to 1827.
Trinitrotoluol, wet with 10 per cent water.	Inf. S.....	.....	No exemption.....	Yellow.....	Par. 1834.
*Varnish.....	Inf. L.....	0-80	1 gallon.....	Red.....	See Paint.
Zinc flue dust.....	Inf. S.....	.....	10 pounds.....	Yellow.....	Par. 1830.

\*See paragraph 1807 (e).

7At or below.

## SECTION 2

### RULES FOR PACKING.

1821. Dangerous articles for which the yellow and white labels, respectively, are prescribed must not be packed in the same package, unless the bottle containing the corrosive liquid is cushioned by incombustible absorbent material in tightly closed metal containers, as prescribed by paragraph 1851. Cylinders of compressed gases must not be packed with other articles.

1822. (a) Barrels, drums, cylinders, boxes, cans, carboys, and other containers used hereafter for the shipment of dangerous articles other than explosives, must be made in accordance with approved specifications that apply and must be properly marked to show compliance with those specifications.

Such containers manufactured and used hereafter must be made in accordance with the specifications that apply as prescribed herein.

Such containers manufactured before the effective date of the specifications prescribed herein may be used if they were made in accordance with specifications previously approved.

Provided, that cylinders manufactured previous to the date on which specifications therefor were first made effective may be used if they comply with the requirements of paragraph 1861 of these regulations. Provided further, that carboys and metal barrels or drums manufactured and purchased prior to the date on which specifications were first made effective, may be used if they are in good condition and afford a package as secure as packages constructed under corresponding specifications.

(b) In addition to standing the tests prescribed, the design and construction of packages must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under the ordinary conditions incident to transportation. The results of experience, gained by an examination of damaged or broken packages on arrival at destination, must be reported to and recorded by the Bureau of Explosives, to the end that further use of any particular kind of package shown by experience to be inefficient may be prohibited by the Commission.

(c) Pending approval and promulgation by the Commission of specifications for types of shipping containers other than those for which specifications are published herein, con-

tainers may be used which after investigation made by the Bureau of Explosives, or by other competent testing laboratory in the presence of a representative of the Bureau of Explosives, are shown to possess the general efficiency and the protection against leakage of contents afforded by the standard types of corresponding capacity described in the specifications published herein, provided they are labeled or marked to show compliance with this requirement.

(d) Tank cars used for the shipment of dangerous articles other than explosives must comply with Master Car Builders' specifications, and a tank car that leaks or one that has any defect which would make leakage during transit probable or that has not been tested and stenciled in compliance with Master Car Builders' specifications must not be used for the shipment of any inflammable liquid.

(e) The tanks and their fittings must be examined by the shipper to see that they are in proper condition for loading. Tanks must be examined for evidence of previous leaks; safety and outlet valves, dome covers, and outlet-valve caps must be in proper condition before loading; tanks must be loaded with outlet valve caps off; after loading, tanks must not show any dropping of liquid contents at the seams or rivets, and should such dropping appear cars must be properly repaired by calking; outlet valves must not permit more than a dropping of the liquid with valve caps off, otherwise valve must be reground and repaired. Dome covers and valve caps provided with suitable gaskets must be properly screwed in place before cars are tendered to the carrier.

(f) Loaded tank cars tendered for shipment must be inspected by the carrier to see that they are not leaking; that the air and hand brakes, journal boxes, trucks, and safety appliances are in proper condition for service; and that the car has been tested within limits prescribed by Master Car Builders' specifications.

(g) Tests of all tank cars and their safety valves, as made in compliance with Master Car Builders' specifications, must be certified by the party making the tests to the owner of the tank car and to the chief inspector, Bureau of Explosives, and this certification must show the initials and number of the tank car, the service for which it is suitable, the date of test, place of test, and by whom made.

#### *Inflammable Liquids—Red Label*

1824. (a) All inflammable liquids must be shipped in packages complying with specifications that apply, as follows:

(b) In tightly closed metal cans of not exceeding 10 gai-

lons capacity, packed in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11.

(c) In well-stoppered glass or earthenware vessels of not exceeding 1 gallon capacity, cushioned in wooden boxes complying with Specification No. 2 or cushioned in wooden barrels or kegs complying with Specification No. 11, or in a well-stoppered glass or earthenware vessel of not exceeding 5 gallons capacity, well cushioned in a wooden box and not more than one such vessel in the box. The completed package must comply with swing and drop tests prescribed for boxed carboys by Specification No. 1.

(d) In well-stoppered glass, earthenware, or metal vessels of not exceeding 1 pint capacity when flash point is 20° F., or lower, and 1 quart capacity when flash point is above 20° F., cushioned in fiber board or corrugated strawboard containers complying with Specification No. 24.

(e) In wooden kits of not exceeding 10 gallons capacity, packed in wooden boxes complying with Specification No. 2, or cushioned in wooden barrels or kegs complying with Specification No. 11.

(f) In metal-jacketed cans of not exceeding 10 gallons capacity, complying with Specification No. 23.

(g) In well-stoppered carboys of not exceeding 13 gallons capacity, cushioned in wooden boxes complying with Specification No. 1.

(h) In wooden barrels or kegs complying with Specification No. 10 when the flash point of the liquid is not lower than 20° F., or in wooden barrels or kegs complying with Specification No. 9 when the flash point is lower than 20° F., unless otherwise provided in the tariffs under which shipment moves.

(i) In metal barrels or drums complying with Specification No. 5.

(j) In tank cars complying with Master Car Builders' specifications provided the vapor tension of the inflammable liquid corresponding to a temperature of 100° F. does not exceed 10 pounds per square inch. A tank car must not be used for shipping inflammable liquids with flash point lower than 20° F., unless it has been tested with cold-water pressure of 60 pounds per square inch and stenciled as required by Master Car Builders' specifications, and is equipped with safety valves set to operate at 25 pounds per square inch, and with mechanical arrangement for closing dome cover as specified in paragraph 1824 (k).

(k) Liquid condensates from natural gas or from casing head gas of oil wells, made either by the compression or absorption process, alone or blended with other petroleum products, must be described as Liquefied Petroleum Gas when the vapor pressure<sup>1</sup> at 100° F. (90° F. November 1 to March 1) exceeds 10 pounds per square inch.

When the liquid condensate, alone or blended with other petroleum products, has a vapor pressure not exceeding 10 pounds per square inch, it must be described and shipped as Gasoline, Casinghead Gasoline, or Casinghead Naphtha.

Liquefied petroleum gas of vapor pressure exceeding 10 pounds per square inch and not exceeding 15 pounds per square inch, from April 1 to October 1 and 20 pounds per square inch from October 1 to April 1, must be shipped in metal drums or barrels which comply with Shipping Container Specification No. 5; or in special insulated tank cars approved for this service by the Master Car Builders' Association.

Liquefied petroleum gas of vapor pressure exceeding 15 or 20 pounds per square inch as provided herein, and not exceeding 25 pounds per square inch, must be shipped only in metal drums or barrels which comply with Shipping Container Specification No. 5.

Liquefied petroleum gas of vapor pressure exceeding 25 pounds per square inch must be shipped in cylinders as prescribed for compressed gases (see pars. 1861 to 1863, inclusive).

When the liquid condensate, alone or blended with other petroleum products, has a vapor pressure not exceeding 10 pounds per square inch it must be described as Gasoline or Casinghead Gasoline or Casinghead Naphtha and must be shipped in metal drums or barrels complying with Specification No. 5; or in ordinary tank cars, 60 pounds test class equipped with mechanical arrangement for closing of dome covers as specified in Master Car Builders' specifications for tank cars.

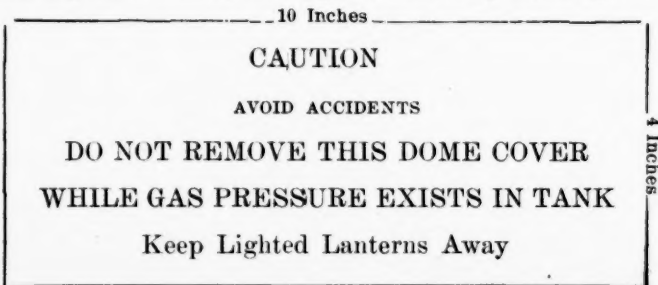
Every tank car containing liquid condensates, either blended or unblended, including liquefied petroleum gas, as defined herein, must have safety valves set to operate at 25 pounds per square inch with a tolerance of 3 pounds above or below, and the mechanical arrangements for closing the dome covers of such cars must either be such as to make it practically impossible to remove the dome cover while the interior of the car is subjected to pressure; or suitable vents that will

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(1) In measuring the vapor pressure the container may be vented momentarily at a temperature of 70° F.

be opened automatically by starting the operation of removing the dome cover must be provided:

The shipper must attach securely and conspicuously to the dome and dome cover three special white dome placards measuring 4x10 inches, bearing the following wording:



One placard must be attached to each side of the dome and one placard must be attached to the dome cover. The presence of these special dome placards must be noted on the shipping order by the shipper and by the carrier on the billing accompanying the car. Placards must conform to samples furnished by the Chief Inspector of the Bureau of Explosives.

(1) Carbon bisulphide in interior packages of capacity greater than one-half gallon must be shipped in metal cans of not less than 28 gauge, boxed, complying with Specification No. 2; or in metal barrels or drums complying with Specification No. 5, such barrels or drums not to exceed 55 gallons capacity. Carbon bisulphide may also be shipped in tank cars complying with paragraph 1824 (j).

1825. (a) Packages containing inflammable liquids must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers, due to increase of temperature during transit. In all such packages this vacant space must not be less than 2 per cent of the total capacity of the container. In tank cars the vacant space must not be less than 2 per cent<sup>1</sup> of the total capacity of the tank, i. e., the shell and dome capacity, combined. If the dome of tank cars does not provide this 2 per cent, sufficient vacant space must be left in the shell of the tank to make up the difference.

(b) In packages containing alcohol, cologne spirits, high

(1) An outage of 2 per cent is frequently insufficient for light petroleum products, owing to the fact that they expand more than heavier petroleum products when the temperature increases, and this rate of expansion varies with the specific gravity of the material. It is recommended that when

wines, or other distilled spirits of 150 proof or over the vacant interior space or allowance for wantage or ullage must be the maximum permitted by the United States Internal Revenue Regulations.

1826. Interior packages containing 1 quart or more of an inflammable liquid must be packed with their filling holes up and the top of the outside package must be plainly marked "THIS SIDE UP."

1827. Wooden-jacketed cans and wooden kits must not be used for the shipment of inflammable liquids, except as inside containers as provided by Specification No. 2 or 11.

#### LABELS.

1864. (a) Unless exempted on account of quantity or method of packing (see columns 3 and 5, list, par. 1807), all packages containing dangerous articles named in the list, paragraph 1807, and similar articles defined by paragraphs 1802 to 1806, inclusive, must be conspicuously labeled by the shipper. Labels should be applied when practicable to that part of the package bearing the consignee's name and address.

(b) Labels will not be required on packages in carload shipments to be unloaded by the consignee, but the proper placards must be obtained from the carrier and applied by the shipper to the car loaded by him. When it is known, however, that subsequent shipments of these packages in less-than-carload quantities, and in the original outside packages, will probably be made by the consignee, the original manufacturing shipper should attach labels to the packages.

(c) Shippers must furnish and attach the labels prescribed for their packages. Labels must not be applied to packages containing articles which are not subject to these regulations, nor to packages which are exempt from labels on account of quantity or method of packing. (See columns 3 and 5, list, par. 1807.) Packages containing articles which are subject to these regulations and which are thus exempt from labels, must be plainly marked "NO LABEL REQUIRED."

tank cars are loaded with gasoline, casing-head gasoline or casing-head naphtha (see Par. 1824 (k)) the outage in tank shall not be less than the following.

Temperature of product when loaded.	Minimum outage required when gravity is—		
	50-60° B. Per cent.	60-70° B. Per cent.	70-80° B. Per cent.
0- 60° F.....	3.2	3.5	4.1
61- 70° F.....	2.5	2.8	3.3
71- 80° F. . . . .	2.0	2.1	2.4
81-100° F. . . . .	2.0	2.0	2.0

(d) Containers shipped as "EMPTY" (except in car-load shipments to be unloaded by consignee) must have the old red, yellow, white, or green labels removed or completely covered by a square white label measuring not less than 6 inches on each side, and bearing thereon the word "EMPTY" in letters not less than 1 inch high

1865. Labels must be of diamond shape, with each side  $\frac{4}{8}$  inches long. The color is *red* for inflammable liquids and compressed inflammable gases, *yellow* for inflammable solids and oxidizing materials, *green* for noninflammable compressed gases, and *white* for corrosive liquids. Labels must conform to standards as to size, printing, and color, and samples will be furnished, on request, by the chief inspector of the Bureau of Explosives, 30 Vesey Street, New York City.

1866. The wording must be in black letters inside of a black line border measuring  $3\frac{1}{2}$  inches on each side, and as follows:<sup>1</sup>



Red label for inflammable liquids. (Reduced size.)

(1) The carrier's name and form number, or the shipper's name and address, may be printed on the labels, in type not larger than 10 point, if placed within the black line border and in the upper or lower corner of the diamond. A combination diamond-shaped label tag of proper color, bearing on one side the shipping information and on the reverse side the wording prescribed herein, will be permitted.



Yellow label for inflammable solids and oxidizing materials. (Reduced size.)

#### SHIPPING ORDERS.

1867. (a) Any article subject to these regulations whether label is required or not, must be described on the shipping order under the specific or general name provided for the description of such freight by the carrier's classification and tariff governing

(b) The shipping order must also show opposite the entry of the article the color of label applied, or "No label required." For carload lots of such articles loaded by the shipper, the shipping order must show the kind of placard applied to the car, or "No placard required."

(c) The shipping order must also show the following certificate in the lower left-hand corner over the written or stamped facsimile signature of the shipper or of his duly authorized agent:

This is to certify that the above articles are properly described by name and are packed and marked and are

in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

(d) A shipping order that does not cover the shipment of an article classified as dangerous or doubtful by these regulations must not show thereon the label notation or the certificate prescribed for dangerous articles. Unnecessary certificates and label notations on shipping-order blanks must be canceled by the shipper.

(e) Whenever orders are placed in foreign countries for the importation of dangerous articles to be forwarded from port of entry by rail, the importer must furnish with the order to the foreign shipper and also to the forwarding agent at the port of entry, full and complete information as to the necessary packing, marking, and labeling required by these regulations. The forwarding agent must file with the originating carrier a certified shipment order and must see that the packages are properly packed, marked, and labeled.

#### WAYBILLING.

1873. The revenue or other waybill prepared from the shipping order and transfer, or any other billing delivered to connecting carrier for dangerous articles in list, paragraph 1807, and for other articles not in the list but properly offered for shipment as dangerous articles, must properly describe these articles by classification or tariff name and state for less-than-carload shipments the color of label applied. For carload shipments they must show the kind of placard applied, and when the lading is not dangerous but is properly described by one of the doubtful names, distinguished by an asterisk in the list, paragraph 1807, the billing for the car must be indorsed "No placard required." The shipper's certificate must be in possession of the initial carrier when these indorsements are made on original billing.

The revenue waybill for any dangerous article requiring red or yellow or white labels must also have plainly stamped or plainly written on the face and above the center line thereof, in letters not less than three-eighths of an inch high, the words "INFLAMMABLE" or "ACID."

#### PLACARDS AND HANDLING CARS.

1901. Carriers must keep on hand an adequate supply of placards. Placards will be furnished by carriers to shippers for attachment to cars loaded by them.

1902. (a) The carrier must verify the attachment of the

proper placard by the shipper as soon as a car requiring a placard is accepted by the carrier for transportation.

(b) Special care must be taken to avoid rough treatment and unnecessary switching of placarded cars.

(c) A daily record showing the initials and numbers of all loaded cars placarded must be kept on file at originating, transfer stations and interchange points.

1903. (a) When the lading requiring the placard is removed from cars, placards must be removed, except that "INFLAMMABLE" placards when offered for movement or as "empty" until such cars are known to have been properly cleaned with steam or reloaded with a substance that does not require the placard. As provided in paragraph 1941 (b) acid placards which are painted or stenciled on tank cars may be allowed to remain.

(b) Many fatal accidents have resulted from using lanterns or lighted matches to examine the interior of empty tank cars or in using hot rivets to repair unsteamed tank cars, which may contain inflammable vapors even when the previous lading was not of flash point below 80° F. Only incandescent electric lights should be used for this examination.

(c) Outlet valve caps and dome covers must be securely placed in proper position on empty tank cars requiring "INFLAMMABLE" placards when offered for movements or when transferred to or from connecting lines in interchange.

1904. A carrier must not move from a station, yard, or siding a car known to require placards until the proper placards are attached. Placards lost in transit must be replaced by the carrier.

1905. (a) Tank cars placarded "INFLAMMABLE" must be placed in trains, if possible, at least five cars from the engine and five cars from the caboose, but must not be placed next to a car placarded "EXPLOSIVES." When length of train does not permit this they must be placed as near the middle of the train as practicable, and in all cases carriers must see that their train crews are informed of the presence and location of such cars in the train.

(b) The carrier must see that its representative in charge of a train and a yard or terminal from which a freight train starts makes a thorough check and record of the cars bearing "INFLAMMABLE" or "ACID" and "EXPLOSIVES" placards with the billing to see that all placards required are attached; that those not required are removed;

and that placarded cars are properly placed in trains, as required by these regulations.

1906. When cars protected by "INFLAMMABLE" placards are received or held in yards, particularly at night, the carrier must see that all necessary precautions are taken to prevent accidents. These precautions must include provision for quickly removing and isolating them in case of fire. When such cars are held in yards for a period longer than 12 hours, they must be placed where they will be readily accessible for prompt removal in case of fire or explosion. A separate track or tracks, when available, must be designated at terminal classification or receiving yards for such cars, and cars must be coupled at all times during such holding. The carrier's representative in charge must be informed at all times of the presence and location of such cars placarded "INFLAMMABLE."

1907. In classification yards and in switching it must be determined by inspection and trial that such a car has its brakes in first class order before a draft containing it is cut, and a tank car placarded "INFLAMMABLE" must not be started down a ladder track, incline, or hump until the preceding car has cleared the ladder. It also must clear the ladder before another car is allowed to follow.

1908. (a) Cars bearing "INFLAMMABLE" placards and cars adjacent to them must be watched with extra care to discover hot journals.

(b) All available opportunities must be utilized by noting the odor of inflammable liquids or otherwise to discover leaks in these cars and to protect leaking cars from ignition of contents by flame of inspectors' lanterns or torches, by burning fusees, by switch lights, by switch-thawing flames, by fires on side of track, by coals from locomotives passing over a roadbed strewn with leakage, or otherwise. (See par. 1956.)

1909. Whenever a tank car loaded with an inflammable liquid is discovered in transit in a leaking condition all unnecessary movement of the car must cease until the unsafe condition of the car is remedied. Every possible precaution necessary to prevent ignition of the contents must be observed, and the general precautions indicated in paragraphs 1951 to 1957, inclusive, should be followed.

NOTE.—Tank cars containing inflammable liquids that are to be offered in interchange should be inspected on the track where transfer is assembled for delivery to receiving line. If a tank car is found in leaking condition, it must not be offered

in interchange. Where actual interchange to receiving line is distant from point of delivery by delivering line, and repair facilities are provided, if such a tank car develops a leak en route to the receiving line interchange track, the receiving line should accept the car, taking every possible precaution to prevent ignition of contents and handling the car as indicated in paragraphs 1909, 1951 to 1957.

1912. In unloading tank cars the following rules should be observed:

(a) The dome cover should be unscrewed by placing a bar between the dome-cover lug and the knob; the valve-rod handle in the dome should be moved back and forth a few times to ascertain if the valve is properly seated, and if seated, the valve cap should then be removed with a suitable wrench, having a pail to catch any liquid that may be in the valve nozzle.

(b) The unloading connection should be securely attached to the valve nozzle, and valve should then be raised by working the valve-rod handle. The dome cover should be placed over the dome opening, resting on a piece of wood, to allow air to enter the tank. The dome cover should not be replaced while unloading, as this action may result in collapse of the tank. After tank is unloaded the valve should be seated, valve cap and dome cover replaced. "INFLAMMABLE" placards must not be removed.

(c) When necessary to unload tank cars from the dome, or when necessary to transfer the contents of one tank car through the outlet valve into the dome of another tank car, care should be observed to see that all of the connections are tight and that the pipe or hose, when inserted into the open manhole for pumping or filling purposes, is surrounded by wet burlap to prevent the escape of vapors and to avoid igniting them.

(d) When the "blowing" of safety valves of a car containing inflammable liquids is noted, any available means for cooling the car shell and contents, such as spraying with water, should be utilized; and if practicable the car should be moved to an isolated point, to minimize the fire risk. Covering the safety valves with wet cloth, wet blankets, or wet gunny sacks will decrease the danger of igniting vapors escaping from a "blowing" valve. The burning of these vapors at the safety valve is not liable to cause an explosion. The valves are designed to permit, in emergencies, the burning in this way of the entire contents of the car.

### INFLAMMABLE PLACARD.

1913. A placard of diamond shape, printed on strong, thin, white paper for pasting on tank cars, and on strong tag board for tacking to wooden cars or to wooden boards of suitable size attached for this purpose to metal box cars or tank cars, measuring  $10\frac{3}{4}$  inches on each side, and bearing in red and black letters the following inscription, must be securely attached to each outside end and to each side door of a box or stock car containing one or more packages protected by the *red* or the *yellow* diamond label, and to each side and end of a tank car containing an inflammable liquid:



Inflammable placard. (Reduced size.)

### IN CASE OF A WRECK.

1946. In case of a wreck involving a car containing inflammable freight it should be assumed that packages are broken and the leakage has occurred which may cause fire if lighted lanterns or other flames are taken into or near these cars. As much of the train as possible should be moved to a place of safety. A car containing inflammable freight should

be opened for ventilation and packages protected by red labels and cylinders of compressed gases should be removed to a safe place. Substances spilled from broken packages protected by yellow label should also be carefully removed. Cylinders of compressed gases may be exploded if they are exposed to fire or struck a sharp blow and the flying fragments would then be dangerous. Inflammable liquids spilled from broken packages or tank cars should be well covered with dry earth before a lighted lantern, torch, or an engine is used in the vicinity. Acids spilled in cars should be covered with dry earth and the car floor should be thoroughly swept.

#### LEAKING TANK CARS.

1951. Action in any particular case will depend upon existing conditions, and good judgment will be necessary to avoid disastrous fires on the one hand and the useless sacrifice of valuable property on the other.

Volatile (or combustible) liquids, such as gasoline, naphtha, etc., in large quantity and spread over a large surface will form vapors that will ignite at a considerable distance, depending on the kind and quantity of liquid and the direction and force of the wind. Many of the liquids, regarded as safe to carry under ordinary conditions and transported in tank cars without the inflammable placard, should still be treated as dangerous in handling a wreck.

1952. When oil cars are leaking all lights or fires near them that can possibly be dispensed with should be extinguished or removed. Incandescent electric lights or portable electric flash lights should be used when available. Whenever practicable the work of handling a wrecked oil car should be done during daylight.

1953. Lanterns necessarily used for signaling should be kept on the side from which the wind is blowing and at as high an elevation as can be obtained. The vapors will go with the wind but not against it. The ash pan and fire box of a locomotive or steam derrick, especially on the side of a wrecked or leaking tank car toward which the wind is blowing, is a source of danger. Wrecks involving oil cars should in no case be approached with lighted pipes, cigars, or cigarettes.

1954. Effort should be made to prevent the spread of oil over a large surface by collecting it in any available vessels or draining it into a hole or depression at a safe distance from the track. When necessary, trenches should be dug for this purpose.

It is not safe to drain inflammable oil in large quantities into a sewer, since vapors may thus be carried to distant points and there ignited. Care should be exercised also not to permit oil to drain into stream of water which may be used by irrigation plants or for watering stock. Dry earth spread over spilled oil will decrease the rate of evaporation and the danger. A stream of oil on the ground should be dammed and dry earth be thrown on the liquid as it collects.

1955. Sudden shocks or jars that might produce sparks or friction should be avoided. When possible, jack the wrecked cars carefully into position after removing other cars and freight that might be injured by fire. Only as a last resort, to meet an emergency, should a wrecked tank car be moved by dragging, and when this is done all persons should be kept at a safe distance.

1956. No unnecessary attempt should be made to transport a damaged tank car from which inflammable liquid is leaking. Safety in short movements may be secured by attaching a vessel under small leaks to prevent spread of inflammable liquid over tracks. Cover tracks at intervals in rear of a moving car with fresh earth to prevent fire overtaking the car. Keep engines away; also spectators who may be smoking. If wrecked or derailed, and not in a position to obstruct or endanger traffic, it should have its leak stopped as far as possible and be left under guard until another tank car or sufficient vessels can be provided for the transfer of the liquid, which should be transferred by pumping when practicable.

Even a tank that it not leaking is liable to be ruptured by use of slings, and the slipping of chain slings may produce sparks. Saving of the contents of the tank is not as important as the prevention of fire.

1957. An empty or partially empty tank car, with or without placards, is very liable to contain explosive gases, and lights must not be brought near it.

1958. *Water will not quench an oil fire.*—If the fire can not be smothered by use of earth, steam, or wet blankets, effort should be concentrated on confining it and saving other property.

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**Government's Exhibit 65.****G. P. L. CO. TELEGRAPH SERVICE.**

(rec'd Mar 24 1917 Wrote . . . . . Wired Mar 24 1917)

Ans'd verb'y Mar 27 1917)

Order Naph

10 GF SP RS

Pittsburgh, Pa., Mar. 24, 1917.

Tryon, Port Arthur, Tex.

perpejaua (Please have) sleighbell (shipped to) drum-right Okla. care Gypsy rabanna (loading rack) santafe delivery four cars zangenhorn (heavy naphtha) and follow with four cars every wasemen (2 weeks)

Taber

2:08 pm

**Government's Exhibit 66.**

8 Monday, February 26, 1917. 9

Car	Kieffer	80.3	25+	1039
Car	Kieffer	78.3	25+	1036
Car	Kieffer	79.6	25+	1027
Car	Kieffer	78.1	25+	1042
Car	Kieffer	78.9	25+	1061
Car	Kieffer	78.9	25+	1029
Car	Kieffer	78.9	25+	1082
Car	Kieffer	78.9	25+	1136
Car	Kieffer	79.1	25+	1143
Car	Kieffer	79.1	25+	1243
Car	Kieffer	78.3	25+	1610
Car	Kieffer	78.6	25+	1616
Car	Kieffer	78.5	25+	a629
Car	Kieffer	78.6	25+	b629
Car	Kieffer	78.9	25+	c629
Car	Kieffer	79.9	25+	a627
Car	Kieffer	80.1	25+	b627
Car	Kieffer	79.9	25+	c627

10 11

Cars	Keiffer	75.9	25+	615a
Cars	Keiffer	75.7	25+	615b
Cars	Keiffer	75.3	25+	615c
Cars	Keiffer	78.6	25+	218
Cars	Keiffer	78.8	25+	2016
Cars	Keiffer	77.8	25+	332
Cars	Keiffer	79.3	25+	1064
Cars	Keiffer	79.5	25+	328
Cars	Keiffer	77.6	25+	1728

1272 GULF REFINING COMPANY, A CORPORATION, vs.

Cars	Keiffer	79.6	25+	1034
Cars	Keiffer	79.5	25+	1052
Cars	Keiffer	77.3	25+	1148
Cars	Keiffer	77.9	25+	1054
Cars	Keiffer	78.3	25+	410
Cars	Keiffer	80.7	25+	1112

12 Wednesday, February 28, 1917. 13

520	Navy Gasoline	64.0	25+	120-352
511	Gasoline	60.3	25+	128-383
805	Gasoline	63.1	25+	104-384
357	Gasoline	61.2	25+	136-368
829	Crude Naphtha	57.0		

14 15

Cars	Keiffer	76.5	25+	Car No. 1366
Cars	Keiffer	81.5	25+	Car No. 428
Cars	Keiffer	80.5	18+	Car No. 222
Cars	Keiffer	76.5	25+	Car No. 1113
Cars	Keiffer	80.7	25+	Car No. 956
Cars	Keiffer	77.6	25+	Car No. 1369
Cars	Keiffer	81.2	17+	Car No. 1718
Cars	Keiffer	77.3	25+	Car No. 1208
Cars	Keiffer	81.6	17	Car No. 422
Cars	Keiffer	76.7	25+	Car No. 427
Cars	Keiffer	77.9	25+	Car No. 229
Cars	Keiffer	77.1	25+	Car No. 1100

18 Friday, March 2, 1917. 19

Car	Kieffer	79.0	25+	934
Car	Kieffer	79.1	25+	1271
Car	Kieffer	78.8	25+	B620
Car	Kieffer	79.0	25+	1510
Car	Kieffer	78.8	25+	1156
Car	Kieffer	79.4	25+	1066
Car	Kieffer	80.7	25+	449
Car	Kieffer	78.6	18+	A620
Car	Kieffer	79.0	19+	C620

22 Monday, March 5, 1917. 23

Cars	Keiffer	3-4-17	80.2	25+	1207
Cars	Keiffer	A	80.0	25+	621
Cars	Keiffer	B	79.8	25+	621
Cars	Keiffer	C	79.7	25+	621

28	Wednesday, March 7, 1917.				29
520	Navy Gasoline	63.9	25+		131-363
511	Gasoline	60.2	25+		132-392
805	Gasoline	59.7	25+		
857	Gasoline	63.7	25+		128-357
829	Crude Naphtha	55.4			

30					31
Cars	Keiffer	80.3	25+		900
Cars	Keiffer	80.0	25+		1225
Cars	Keiffer	79.8	25+		1220
Cars	Keiffer	79.9	25+		2025
Cars	Keiffer	79.5	25+		1613
Cars	Keiffer	80.0	25+		1377
Cars	Keiffer	79.9	25+		1331
Cars	Keiffer	79.1	25+		1611
Cars	Keiffer	79.7	25+		168

34	Friday, March 9, 1917.						35
Cars	838	Ptrs. Nap.	7626	54.8	25+	Filt	960
Cars	838	Ptrs. Nap.	7626	54.8	25+	filt	1027
Cars	838	Ptrs. Nap.	7626	54.5	25+	filt	1502
Cars	838	Ptrs. Nap.	7626	54.5	25+	filt	1114
Cars	838	Ptrs. Nap.	7626	55.0	25+	filt	428
Cars	838	Ptrs. Nap.	7626	54.9	25+	filt	1083

36					37
Cars	Keiffer	79.8	25+		Car No. 916
Cars	Keiffer	78.8	25+		Car No. 911
Cars	Keiffer	79.7	25+		Car No. 1607
Cars	Keiffer	79.6	25+		Car No. 1610
Cars	Keiffer	79.6	25+		Car No. 1061
Cars	Keiffer	78.8	25+		Car No. 1209
Cars	Keiffer	79.0	25+		Car No. 913
Cars	Keiffer	79.5	25+		Car No. 1155
Cars	Keiffer	78.5	25+		Car No. 1065
Cars	Keiffer	80.0	25+		Car No. 1211
Cars	Keiffer	78.0	25+		Car No. 1035
Cars	Keiffer	79.1	25+		Car No. 1505
Cars	Keiffer	79.8	25+		Car No. 1042

44	Wednesday, March 14, 1917.				45
938	Ptrs. Nap.	7626	54.6	25+	1006
838	Ptrs. Nap.	7626	54.7	25+	1220

1274 GULF REFINING COMPANY, A CORPORATION, vs.

838	Ptrs. Nap.	7626	54.7	25+	1207
838	Ptrs. Nap.	7626	54.7	25+	335
838	Ptrs. Nap.	7626	54.8	25+	1135
838	Ptrs. Nap.	7626	55.1	25+	1333
838	Ptrs. Nap.	7626	55.1	25+	2024
838	Ptrs. Nap.	7626	51.1	25+	2028

54 Monday, March 19, 1917. 55

938	Ptrs. Nap.	7626	54.7	25+	2019
938	Ptrs. Nap.	7626	54.8	25+	408
838	Ptrs. Nap.	7626	54.8	25+	1041
838	Ptrs. Nap.	7626	54.6	25+	1156
838	Ptrs. Nap.	7626	55.1	25+	1620
938	Ptrs. Nap.	7626	55.0	25+	1002
838	Ptrs. Nap.	7626	55.1	25+	368
838	Ptrs. Nap.	7626	55.0	25+	1228

58 Wednesday, March 21, 1917. 59

Car	Keiffer	78.1	25+	428
Car	Keiffer	78.0	25+	1237
Car	Keiffer	78.3	25+	2012
Car	Keiffer	77.3	25+	1218
Car	Keiffer	77.9	25+	1074

64 Friday, March 23, 1917. 65

520	Navy Gasoline	63.3	25+	
511	Gasoline	61.4	25+	
805	Gasoline	62.7	25+	
857	Navy Gasoline	63.3	25+	
829	Crude Naphtha	54.8		

66				67
Car	Keiffer	80.0		1111
Car	Keiffer	78.8		328
Car	Keiffer	78.8		1064
Car	Keiffer	79.5		218
Car	Keiffer	80.2		1036
Car	Keiffer	78.7		18024
Car	Keiffer	78.9		1027
Car	Keiffer	80.5		2015
Car	Keiffer	76.6		1229
Car	Keiffer	78.3		1083
Car	Keiffer	79.8		426

## UNITED STATES OF AMERICA.

1275

Car	Keiffer	79.8	2025
Car	Keiffer	79.2	332
Car	Keiffer	79.6	1502

72 Monday, March 26, 1917. 73

838	Ptrs. Nap.	11348	54.7	25+	1209
838	Ptrs. Nap	11348	54.7	25+	1170
838	Ptrs. Nap.	11348	54.7	25+	1220
838	Ptrs. Nap	11348	54.7	25+	1225

78 Friday, March 30, 1917. 79

520	Navy Gasoline	63.3	25+	130-368
511	Gasoline	61.3	25+	120-378
805	Gasoline	62.4	25+	112-377
857	Navy Gasoline	63.3	25+	136-344
838	Painters Naphtha	54.7	25+	196-408
829	Crude Naphtha	53.8		
Cars	805 and 838 Gasoline	60.8	25+	1257

84 Monday, April 2, 1917. 85

838	Ptrs. Nap.	7626	54.7	25+	2028
838	Ptrs. Nap.	7626	54.9	25+	236
838	Ptrs. Nap.	7626	54.7	25+	911
838	Ptrs. Nap.	7626	54.7	25+	1112
838	Ptrs. Nap.	7626	54.7	25+	1015
838	Ptrs. Nap.	7626	54.7	25+	1049
838	Ptrs. Nap.	7626	54.7	25+	1272
838	Ptrs. Nap.	7626	54.7	25+	1319

84 85

Car	Keiffer	79.4	25+	410
Car	Keiffer	76.9	25+	2010
Car	Keiffer	78.0	25+	1620
Car	Keiffer	77.7	25+	a607
Car	Keiffer	79.4	25+	b607
Car	Keiffer	74.7	25+	c607
Car	Keiffer	79.1	25+	1277
Car	Keiffer	79.0	25+	1602
Car	Keiffer	78.1	25+	1612
Car	Keiffer	78.6	25+	1010
Car	Keiffer	79.1	25+	960
Car	Keiffer	78.9	25+	952
Car	Keiffer	79.1	25+	1002

1276 GULF REFINING COMPANY, A CORPORATION, vs.

Car	Keiffer	79.6	25+	1331
Car	Keiffer	77.8	25+	1011

88 Wednesday, April 4, 1917. 89

520	Navy Gasoline	63.3	25+	128-370
511	Gasoline	61.3	25+	120-371
805	Gasoline	63.1	25+	130-342
857	Navy Gasoline	63.6	25+	136-340
829	Crude Naphtha	54.3		

90 91

Car	Keiffer	78.2	25+	C622
Car	Keiffer	79.4	25+	1619
Car	Keiffer	79.0	25+	B629
Car	Keiffer	79.2	25+	934
Car	Keiffer	78.3	25+	1611
Car	Keiffer	77.8	25+	1034
Car	Keiffer	78.8	25+	1462
Car	Keiffer	76.6	25+	B622
Car	Keiffer	79.1	25+	2020
Car	Keiffer	79.4	25+	2012
Car	Keiffer	78.1	25+	1080
Car	Keiffer	78.9	25+	A622
Car	Keiffer	77.8	25+	1237
Car	Keiffer	78.9	25+	229
Car	Keiffer	77.6	25+	A629
Car	Keiffer	78.8	25+	C629
Car	Keiffer	78.4	25+	1074
Car	Keiffer	78.5	25+	924

100 Monday, April 9, 1917. 101

Cars	Keiffer	Off Color	80.1	+8 D D	1370
Cars	Keiffer	Off Color	80.0	20+	1321
Cars	Keiffer		79.0	25+	1113
Cars	Keiffer		79.5	25+	1368
Cars	Keiffer		78.1	25+	1378
Cars	Keiffer		73.1	25+	1271
Cars	Keiffer		73.2	25+	1384
Cars	Keiffer		73.0	25+	168
Cars	Keiffer		74.7	25+	1434
Cars	Keiffer		73.4	25+	416
Cars	Keiffer		71.8	25+	1206
Cars	Keiffer		75.1	25+	1229

112	Friday, April 13, 1917.				113
Cars	Keiffer	77.9	25+		1132
Cars	Keiffer	76.9	25+		445
Cars	Keiffer	77.9	25+		1111
Cars	Keiffer	77.9	25+		1277
Cars	Keiffer	78.4	25+		1616
Cars	Keiffer	79.0	25+		1621
Cars	Keiffer	78.1	25+		1032
Cars	Keiffer	78.0	25+		1143
Cars	Keiffer	76.8	25+		159

114	Monday, April 16, 1917.				115
				Over	Dry
520	Navy Gasoline	63.0	25+	133	355
511	Gasoline	59.8	25+	135	382
805	Gasoline	60.4	25+	133	375
857	Navy Gasoline	62.5	25+	140	350
838	Painters	54.7	25+	220	405

118					119
Cars 805-838	Gas.	a40018	60.3	25+	a620
Cars 805-838	Gas.	b40018	60.3	25+	b620
Cars 805-838	Gas.	c40018	60.3	25+	c620
Cars 838 Painters N		7626	55.0	25+	2024
Cars 838 Painters N		7626	54.8	25+	1331
Cars 838 Painters N		7626	55.1	25+	1029
(Cars 805-838 Re-Sample					)
(Gasoline		40004)	60.4	25+	1111)
(Cars 805-838 Re-Sample					)
(Gasoline		40003)	60.4	25+	1132)
Cars 838 Painters N		7626	54.8	25+	325
Cars 838 Painters N		7626	55.0	25+	332
Cars 838 Painters N		7626	54.8	25+	1206
Cars 838 Painters N		7626	55.1	25+	309
Cars 838 Painters N		7626	55.1	25+	1148

122	Wednesday, April 18, 1917.				123
Cars	Keiffer	74.5	25+	1945 1220 1946	1946
Cars	Keiffer	74.6	25+		1947
Cars	Keiffer	74.9	25+		1387
Cars	Keiffer	75.2	25+	1959	1960
Cars	Keiffer	75.5	25+		1956
Cars	Keiffer	75.7	25+		1957
Cars	Keiffer	75.6	25+	1985	958
Cars	Keiffer	76.0	25+		1965

132	Monday, April 23, 1917.				133
838	Ptrs. Nap.	7626	55.3	25+	960
838	Ptrs. Nap.	7626	55.3	25+	1113
838	Ptrs. Nap.	7626	55.3	25+	426
838	Ptrs. Nap.	11348	55.4	25+	1611
838	Ptrs. Nap.	11348	55.1	25+	1616
838	Ptrs. Nap.	11348	55.1	25+	1270
838	Ptrs. Nap.	11348	55.2	25+	1279

134					135
Cars	Kieffer	74.8	25+		1624
Cars	Kieffer	75.0	25+		1083
Cars	Kieffer	75.6	25+		1207
Cars	Kieffer	74.9	25+		1271
Cars	Kieffer	75.2	25+		1384
Cars	Kieffer	75.2	25+		305
Cars	Kieffer	75.3	25+		2012
Cars	Kieffer	75.5	25+		1237
Cars	Kieffer	75.1	25+		1502
Cars	Kieffer	75.4	25+		2010
Cars	Kieffer	74.5	25+		1066
Cars	Kieffer	74.0	25+		1437
Cars	Kieffer	74.5	25+		2016
Cars	Kieffer	74.1	25+		1609

138	Wednesday, April 25, 1917.				139
Car	Keiffer	78.3	21+	(Over)	1963
Car	Keiffer	78.2	21+	(@ 87)	1964
Car	Keiffer	75.0	25+	(Dry)	1205
Car	Keiffer	75.6	25+	(@ 353)	1355

140	Friday April 27, 1917.				141
520	Navy Gasoline	63.8	25+		137-342
511	Gasoline	60.0	25+		132-392
305	Gasoline	61.9	25+		122-380
857	Gasoline		25+		138-386
838	Painters Naphtha	55.0	25+		210-409
855	S. C. Gasoline	63.7	25+		135 4.3%
843	Painters Nap. Dist.	56.2	25+		190-430
829	Crude Naphtha	54.1			

142					143
Car	Keiffer	74.6	25+)		1142
Car	Keiffer	75.2	25+)		1026

Car	Keiffer	74.5	25÷)		1462
Car	Keiffer	74.4	25+)		2022
Car	Keiffer	75.1	25+)		332
Car	Keiffer	74.4	25+)		1029
Car	Keiffer	74.9	25+)	Over at 90	1011
Car	Keiffer	77.7	19+)	Dry at 350	1962
Car	Keiffer	79.1	19+)		1966
Car	Keiffer	77.8	17+)		1961
Car	Keiffer	78.8	19+)		1967
Car	Keiffer	74.7	22+)		1010
Car	Keiffer	78.8	18+)		1968
Car	Keiffer	79.3	18+)		1178

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146	Monday, April 30, 1917.				147
520	Navy Gasoline	63.8	25+		130-342
511	Gasoline	59.0	25+		140-396
805	Gasoline	67.0	25+		103-378
857	Gasoline	60.6	25+		137-385

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148					149
Cars	Keiffer	75.4	25+		1950
Cars	Keiffer	75.8	25+		1949
Cars	Keiffer	74.8	25+		1331
Cars	Keiffer	76.0	25+		1952
Cars	Keiffer	74.2	25+		2024
Cars	Keiffer	75.6	25+		1034
Cars	Keiffer	75.8	25+		1954
Cars	Keiffer	74.3	25+		309
Cars	Keiffer	75.3	25+		1951
Cars	Keiffer	75.4	25+		2025
Cars	Keiffer	76.2	25+		1953
Cars	Keiffer	74.8	25+		1148
Cars	Keiffer	75.6	25+		1247

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150					151
838	Ptrs. Nap.	7626	55.0	25+	1006
838	Ptrs. Nap.	7626	55.2	25+	2024
838	Ptrs. Nap.	7626	54.9	25+	1148
838	Ptrs. Nap.	7626	55.2	25+	1209
838	Ptrs. Nap.	7626	55.0	25+	1178
838	Ptrs. Nap.	7626	55.0	25+	2022
838	Ptrs. Nap.	7626	55.2	25+	1331
838	Ptrs. Nap.	7626	55.1	25+	1247

1280 GULF REFINING COMPANY, A CORPORATION, vs.

162	Monday, May 7, 1917.			163
520	Navy Gasoline	63.9	25+	130-340
511	Gasoline	60.6	25+	136-390
805	Gasoline	62.0	25+	110-385
857	Gasoline	60.4	25+	138-380
829	Crude Naphtha	60.6		

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164				165
Car	Keiffer	77.4	25+	449
Car	Keiffer	77.8	25+	1609
Car	Keiffer	76.1	25+	335
Car	Keiffer	77.3	25+	985
Car	Keiffer	77.4	25+	1956
Car	Keiffer	80.0	20+	434
Car	Keiffer	77.3	25+	328
Car	Keiffer	77.3	25+	1327
Car	Keiffer	78.2	25+	1153
Car	Keiffer	80.2	19+	1229

164					165
838	Ptrs. Nap.	11348	54.9	25+	1355
838	Ptrs. Nap.	11348	55.0	25+	1132
838	Ptrs. Nap.	11348	55.0	25+	1080
838	Ptrs. Nap.	11348	55.0	25+	368

170	Wednesday, May 9, 1917.					171
838	Ptrs. Nap.	11348	55.0	25+	1068	
838	Ptrs. Nap.	11348	55.0	25+	1278	
838	Ptrs. Nap.	11348	55.4	25+	1015	

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170				171
Car	Keiffer	78.1	25+	1251
Car	Keiffer	73.1	25+	1611
Car	Keiffer	73.7	25+	1144-1964
Car	Keiffer	73.8	25+	1616-2010
Car	Keiffer	74.1	25+	1963
Car	Keiffer	77.6	25+	1969
Car	Keiffer	73.2	25+	1270-1279
Car	Keiffer	74.4	25+	1066
Car	Keiffer	74.0	25+	1207-1205
Car	Keiffer	74.0	+19	1624

## UNITED STATES OF AMERICA.

1281

176	Friday, May 11, 1917.					177
838	Ptrs. Nap.	7626	54.7	25+	OK	1321
838	Ptrs. Nap.	7626	54.7	25+	OK	1602
838	Ptrs. Nap.	7626	54.8	25+	OK	408
838	Ptrs. Nap.	7626	54.9	25+	OK	960

176						177
Car	Keiffer		77.1			1331
Car	Keiffer		77.0			956
Car	Keiffer		76.9			1366
Car	Keiffer		76.7			2024
Car	Keiffer		77.0			1209
Car	Keiffer		76.7			1148
Car	Keiffer		77.0			2022
Car	Keiffer		77.2			1006

178	Monday, May 14, 1917.					179
					Over Dry	
520	Navy Gasoline	63.1	25+		135	353
511	Gasoline	60.8	25+		135	376
805	Gasoline	61.8	25+		115	388
857	Gasoline	70.2	25+		110	385
829	Crude Naphtha	54.8				

180						181
838	Painters Naphtha	7626	25+	54.9		1969
838	Painters Naphtha	7626	25+	54.7		1957
838	Painters Naphtha	7626	25+	54.9		1957
838	Painters Naphtha	7626	25+	54.9		1961
838	Painters Naphtha	7626	25+	54.6		1963
838	Painters Naphtha	7626	25+	54.9		1966
805-838	Gasoline	40490	25+	60.4		428
805-838	Gasoline	40363	25+	60.4		1064
805-838	Gasoline	40529	25+	60.3		1066
805-838	Gasoline	40428	25+	60.2		1082
805-838	Gasoline	40494	25+	60.4		1178
805-838	Gasoline	40406	25+	60.1		1113

184	Wednesday, May 16, 1917.					185
Car	Keiffer	75.7	25+			1948
Car	Keiffer	73.2	25+			1946
Car	Keiffer	75.1	25+			1953
Car	Keiffer	73.8	25+			1965
Car	Keiffer	74.7	25+			1954

1282 GULF REFINING COMPANY, A CORPORATION, vs.

Car	Keiffer	75.3	25+	1245
Car	Keiffer	76.1	25+	1951
Car	Keiffer	73.0	25+	1968
Car	Keiffer	75.6	25+	1950
Car	Keiffer	74.6	25+	1952
Car	Keiffer	75.2	25+	1949
Car	Keiffer	75.8	25+	1247
Car	Keiffer	76.2	25+	1945

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192 Monday, May 21, 1917. 193

Car	Keiffer	75.4	25+	1384
Car	Keiffer	75.9	25+	1956
Car	Keiffer	74.4	25+	1385
Car	Keiffer	75.1	25+	335
Car	Keiffer	74.9	25+	1947
Car	Keiffer	75.2	25+	1387
Car	Keiffer	74.9	25+	1609
Car	Keiffer	74.4	25+	1958
Car	Keiffer	74.8	25+	434
Car	Keiffer	75.2	25+	408
Car	Keiffer	74.6	25+	332
Car	Keiffer	75.0	25+	960
Car	Keiffer	75.0	25+	1602
Car	Keiffer	75.2	25+	1038

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194 195

Cars	Ptrs. Nap.	11348	55.0	25+	1247
Cars	Ptrs. Nap.	11348	55.0	25+	1271
Cars	Ptrs. Nap.	11348	55.0	25+	1205
Cars	Ptrs. Nap.	11348	55.0	25+	1255

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198 Tuesday, May 22, 1917. 199

Cars	838	Ptrs. Nap.	7626	55.0	25+	1958
Cars	838	Ptrs. Nap.	7626	55.0	25+	1956
Cars	838	Ptrs. Nap.	7626	55.2	25+	408
Cars	838	Ptrs. Nap.	7626	55.2	25+	1954
Cars	838	Ptrs. Nap.	7626	55.1	25+	1602
Cars	838	Ptrs. Nap.	7626	55.2	25+	1947

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202 Wednesday, May 23, 1917. 203

Car	Keiffer	75.7	25+	1229)	
Car	Keiffer	76.0	25+	1955)	
Car	Keiffer	75.6	25+	1961)	Over

Car	Keiffer	76.6	25+	1957)	@ 88
Car	Keiffer	75.7	25+	1969)	Dry
Car	Keiffer	75.7	25+	1966)	@ 358
Car	Keiffer	74.2	23+	1963)	

206	Friday, May 25, 1917.				207
Car	Keiffer	75.8	25+		2014
Car	Keiffer	76.2	25+		1225
Car	Keiffer	75.8	25+		1967
Car	Keiffer	74.6	25+		1174
Car	Keiffer	75.8	25+		1977
Car	Keiffer	75.4	25+		1975
Car	Keiffer	74.9	25+		445
Car	Keiffer	75.8	25+		1962
Car	Keiffer	75.9	25+		392
Car	Keiffer	75.7	25+		924

212	Monday, May 28, 1917.				213
Cars	Keiffer	75.1	25+		1978
Cars	Kieffer	76.0	25+		1953
Cars	Kieffer	74.9	25+		1369
Cars	Kieffer	75.5	25+		1945
Cars	Kieffer	75.9	25+		1954
Cars	Kieffer	74.5	25+		1968
Cars	Kieffer	75.7	25+		1965
Cars	Kieffer	75.7	25+		1616
Cars	Kieffer	76.0	25+		1946
Cars	Kieffer	75.7	25+		1982
Cars	Kieffer	75.1	25+		2006
Cars	Kieffer	75.9	25+		1948
Cars	Kieffer	75.5	25+		2024

226	Monday, June 4, 1917.				227
Car	Keiffer	70.7	18+	1611)	
Car	Keiffer	75.3	25+	1351)	
Car	Keiffer	74.0	25+	1983)	
Car	Keiffer	74.7	25+	1850)	Over
Car	Keiffer	74.7	25+	1858)	@ 92
Car	Keiffer	74.0	25+	1856)	Dry
Car	Keiffer	74.7	25+	1037)	@ 364
Car	Keiffer	74.5	25+	1851)	
Car	Keiffer	74.7	25+	1854)	
Car	Keiffer	75.1	25+	1852)	

1284 GULF REFINING COMPANY, A CORPORATION, vs.

Car	Keiffer	75.6	25+	1727)
Car	Keiffer	74.0	25+	1853)
<hr/>				
228	Wednesday, June 6, 1917.			229
520	Navy Gasoline	61.8	25+	136-360
511	Gasoline	61.0	25+	130-320
305	Gasoline	63.7	25+	109-384
357	Gasoline	61.0	25+	126-372
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230				231
Car	Keiffer	72.6	25+	1969
Car	Keiffer	74.7	25+	1857
Car	Keiffer	75.9	25+	1956
Car	Keiffer	73.6	25+	1271
Car	Keiffer	75.7	25+	1799
Car	Keiffer	74.9	25+	1768
Car	Keiffer	75.1	25+	1064
Car	Keiffer	74.5	25+	1961
Car	Keiffer	72.9	25+	1205
Car	Keiffer	74.3	25+	1974
Car	Keiffer	75.3	25+	1963
Car	Keiffer	72.3	25+	1247
Car	Keiffer	72.0	25+	1245
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Car	Keiffer	75.1	25+	1967
Car	Keiffer	75.3	25+	1227
Car	Keiffer	75.3	25+	1976
Car	Keiffer	72.8	17+	900
Car	Keiffer	74.9	17+	1011
Car	Keiffer	71.5	18+	2016
Car	Keiffer	75.4	25+	1971
Car	Keiffer	75.0	25+	1977
Car	Keiffer	75.2	25+	1973
Car	Keiffer	75.2	25+	1975
Car	Keiffer	75.0	25+	1964
Car	Keiffer	75.4	25+	1962
<hr/>				
236	Friday, June 8, 1917.			237
Car	Keiffer	72.7	25+	1740
Car	Keiffer	72.8	25+	2025
Car	Keiffer	74.6	25+	1953
Car	Keiffer	72.0	25+	1968
Car	Keiffer	75.1	25+	1978
Car	Keiffer	72.1	25+	1786

Car	Keiffer	73.9	25+	428
Car	Keiffer	73.9	25+	1948
Car	Keiffer	73.8	25+	1979
Car	Keiffer	73.0	25+	1965
Car	Keiffer	72.9	25+	1982
Car	Keiffer	74.7	25+	1954
Car	Keiffer	74.6	25+	1083

242

Monday, June 11, 1917.

243

805-838	Gasoline	40928	61.0	25+	1616
805-838	Gasoline	40883	60.6	25+	1780
805-838	Gasoline	40929	61.0	25+	1774
805-838	Gasoline	40852	60.9	25+	1066
805-838	Gasoline	40838	60.7	25+	1245
805-838	Gasoline	40811	61.0	25+	426
805-838	Gasoline	40856	61.0	25+	1788
805-838	Gasoline	40915	60.7	25+	1333
805-838	Gasoline	40911	61.0	25+	1366
838	Ptrs. Nap.	7626	54.9	25+	1955
838	Ptrs. Nap.	7626	55.1	25+	1855
838	Ptrs. Nap.	7626	55.0	25+	2016
838	Ptrs. Nap.	7626	55.1	25+	1732
838	Ptrs. Nap.	7626	54.9	25+	1963
838	Ptrs. Nap.	7626	54.7	25+	1957

256

Monday, June 18, 1917.

257

520	Navy Gasoline	61.8	25+	135-356
511	Gasoline	60.2	25+	130-400
805	Gasoline	62.7	25+	118-376
857	MT			
829	Crude Naphtha	54.2		

258

259

Car	Unrefined Naphtha	73.5	25+	1858
Car	Unrefined Naphtha	73.8	25+	1624
Car	Unrefined Naphtha	74.1	25+	1201
Car	Unrefined Naphtha	74.2	25+	1950
Car	Unrefined Naphtha	74.0	25+	1225
Car	Unrefined Naphtha	73.4	25+	1727
Car	Unrefined Naphtha	73.5	25+	1852
Car	Unrefined Naphtha	73.9	25+	1951
Car	Unrefined Naphtha	73.5	24+	1856
Car	Unrefined Naphtha	75.4	25+	1854
Car	Unrefined Naphtha	77.5	20+	1853
Car	Unrefined Naphtha	76.3	25+	1850

1286 GULF REFINING COMPANY, A CORPORATION, vs.

262 Wednesday, June 20, 1917. 263

520	Navy Gasoline	61.9	25+	133	357
511	Gasoline	58.2	25+	132	396
805	Gasoline	61.1	25+	124	397
838	Painters Naphtha	54.2	25+	200	420

264 265

805-838	Gasoline	40996	58.0	25+ OK	1971
805-838	Gasoline	41047	58.0	25+ OK	O.K. 1977
838	Ptrs. Nap.	11348	54.8	22+ OK)	By 1065
				) EBP	
838	Ptrs. Nap.	11348	54.2	22+ OK)	1946 1947
838	Ptrs. Nap.	11348	54.2	22+ OK	EBP 1066

270 Friday, June 22, 1917. 271

838	Ptrs. Nap.	7626	54.0	25+	1351
838	Ptrs. Nap.	7626	54.0	25+	1331
838	Ptrs. Nap.	7626	53.8	25+	1740
838	Ptrs. Nap.	7626	53.9	25+	1786
838	Ptrs. Nap.	7626	53.9	25+	1857
838	Ptrs. Nap.	7626	54.0	25+	1983

272 Monday, June 25, 1917. 273

520	Navy Gasoline	61.6	25+	140	357
511	Gasoline	58.5	25+	OK	135 397
805	Gasoline	58.5	25+	OK	128 396
857	Gasoline	58.9	25+	OK	140 402

274 275

805-296	P. M. Gasoline	40511	57.5	25+	1064
805-206	P. M. Gasoline	40969	57.3	25+	1268
805-206	P. M. Gasoline	40792	57.1	25+	A B C 621
805-206	P. M. Gasoline	40791	57.0	25+	A B C 622
206	Painters Nap.	11348	52.9	25+	1209
206	Painters Nap.	11348	52.6	25+	1026
206	Painters Nap.	11348	52.8	25+	1871
206	Painters Nap.	11348	52.7	25+	1080
206	Painters Nap.	11348	52.7	25+	437
206	Painters Nap.	11348	52.7	25+	2029

278 Wednesday, June 27, 1917. 279

520	Navy Gasoline	61.8	25+ O.K.	144-355
511	Gasoline	58.5	25+ O.K.	130-392

805	Gasoline		61.4	25+	120-392
857	Gasoline		60.6	25+	140-381
838	Painters Naphtha		52.7	25+ O.K.	214-434
829	Crude Naphtha		55.2		
838-805	Painters Naphtha	7626	53.3	25+	1978
838-805	Painters Naphtha	7626	53.6	25+	1952
838-805	Painters Naphtha	7626	53.7	25+	1612-1227
838-805	Painters Naphtha	7626	53.2	24+	2024
838-805	Painters Naphtha	7626	52.8	25+	1969

280					281
Car	Unrefined Naphtha	77.5	25		1232
Car	Unrefined Naphtha	77.5	25+		1974

288	Monday, July 2, 1917.				289
Cars	Ptrs. Nap.	7626	54.5	25+	1251
Cars	Ptrs. Nap.	7626	54.5	25+	2014
Cars	Ptrs. Nap.	11348	54.7	25+	1747
Cars	Ptrs. Nap.	11348	54.7	25+	1788
Cars	Ptrs. Nap.	7626	54.2	25+	1731
Cars	Ptrs. Nap.	11348	54.7	25+	1331
Cars	Ptrs. Nap.	7626	54.4	25+	1738
Cars	Ptrs. Nap.	7626	54.2	25+	1710
Cars	Ptrs. Nap.	11348	54.5	25+	1387

304	Monday, July 9, 1917.				305
Cars	838	Ptrs. Nap.	7626	54.1 +25	1980
Cars	838	Ptrs. Nap.	7626	54.3 22+	1946
Cars	838	Ptrs. Nap.	7626	54.0 22+	1853
Cars	838	Ptrs. Nap.	7626	54.5 24+	1947
Cars	838	Ptrs. Nap.	7626	54.1 23+	1852
Cars	838	Ptrs. Nap.	7626	54.1 23+	1855

306	Wednesday, July 11, 1917.				307
520	Navy Gasoline	61.8	25+		128-356
511	Gasoline	59.8	25+		131-403
805	Gasoline	61.7	25+		108-385
857	Gasoline	M T			M T
838	Painters	54.2	25+		208-406
Cars 805	Gasoline	41512	57.8	23+ (Mr. F. says)	1612
Cars 838	Gasoline	41463	59.9	23+ (Mr. GLP ad- (vised to ship)	1227

308					309
Car	Unrefined Naphtha	76.0	+18		1270

1288 GULF REFINING COMPANY, A CORPORATION, vs.

328 Friday, July 20, 1917. 329

520		61.7	25+	
511		58.5	25+	
805		61.5	25+	
857		MT		MT

330 331

Cars	Unrefined Naphtha	77.0	25+	1957
Cars	Unrefined Naphtha	76.6	25+	1982

334 Monday, July 23, 1917. 335

520	Navy Gasoline	61.7	25+	
511	Gasoline	58.3	25+	
805	Gasoline	63.6	25+	
857	Gasoline	MT		
838	Ptrs. Nap.	54.9	25+	

336 337

838	Painters Nap.	7626	53.8	25+	1068
838	Painters Nap.	7626	53.8	25+	1855
838	Painters Nap.	7626	53.9	25+	1852
838	Painters Nap.	7626	53.8	25+	1767
838	Painters Nap.	7626	53.9	25+	1731
Car	Unrefined Nap.		74.4	25+	410
805-838	Gas	41740	58.6	25+	1850
805-838	Gas	41470	58.6	25+	1708
805-838	Gas	41687	58.7	25+	1859
805-838	Gas	41686	58.6	25+	1968
905-838	Gas	41661	58.6	25+	960
805-838	Gas	41341	58.6	25+	1376
805-838	Gas	41704	58.5	25+	1616
805-838	Gas	41703	58.5	25+	1763
805-838	Gas	41683	58.7	25+	1079
805-838	Gas	41540	58.6	25+	1451

340 Wednesday, July 25, 1917. 341

520	Navy Gasoline	61.6	25+	133-358
511	Gasoline	59.3	25+	163-393
805	Gasoline	61.6	25+	111-372
329	Crude Naphtha	54.0		
838	Painters Naphtha	54.4	25+	206-412
805-838	Gasoline 41300	60.4	25+	1971
805-838	Gasoline 41301	60.1	25+	1854
805-838	Gasoline 41299	60.4	25+	1978
805-838	Gasoline 41302	60.2	25+	1947

342				343
Car	Unrefined Naphtha	74.2	25+	1947

344	Friday, July 27, 1917.			345
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520	Navy Gasoline	61.7	25+	138-353
511	Gasoline	59.1	25+	141-393
805	Gasoline	62.2	25+	122-377
857	Gasoline	MT		MT
838	Painters Naphtha	54.6	25+	201-414
829	Crude Naphtha	54.1		
805-838	Gasoline 41571	58.5	25+	1710
805-838	Gasoline 41770	58.5	25+	1954
838	Painters Naphtha 7526	54.7	25+	1951
838	Painters Naphtha 7626	54.6	25+	956
838	Painters Naphtha 7626	54.6	25+	1984
838	Painters Naphtha 7626	54.6	25+	1857
838	Painters Naphtha 7626	54.7	25+	1970
838	Painters Naphtha 7626	54.7	25+	1850

346				347
Cars	Unrefined Naphtha	76.2	18+	1959
Cars	Unrefined Naphtha	76.0	18+	1956

350	Monday, July 30, 1917.			351
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520	Navy Gasoline	61.6	25+	133	352
511	Gasoline	58.9	25+	141	396
805	Gasoline	62.2	25+	121	376
838	Painters Naphtha	54.2	25+	191	407

352					353
805-838	Gasoline	41848	58.0	25+	1969
805-838	Gasoline	41848	58.0	25+	1768
838	Ptrs. Nap.	7626	54.1	23+ OK EBP	1706
	Ptrs. Nap.	7626	54.1	25+	1780
	Ptrs. Nap.	7626	54.1	25+	1451
	Ptrs. Nap.	7626	54.2	25+	1708
	Ptrs. Nap.	7626	54.5	25+	1738
	Ptrs. Nap.	7626	54.1	25+	1701
	Ptrs. Nap.	11348	54.1	25+	1071
	Ptrs. Nap.	11348	54.1	25+	1079
	Ptrs. Nap.	11348	54.0	25+	1178
	Ptrs. Nap.	11348	54.1	25+	1337
	Ptrs. Nap.	11348	54.1	25+	1763
	Ptrs. Nap.	11348	54.0	25+	1428

**Government's Exhibit 68.**

GULF REFINING COMPANY

G. R. Nutty, Vice President

Frick Building Annex

Pittsburgh, Pa.

Cable Address "GULFOIL"

W. U. and A. B. C. Code

4th & 5th Editions

Chas. B. Ellis, Traffic Manager

Petroleum  
and Its Products

June 2nd, 1914.

File 7-Kiefer.

Mr. W. P. Donovan, Sup't, Gypsy Oil Co., Kiefer, Okla.

Dear Sir: Upon receipt of this letter, will you kindly change routing on the gasoline from Kiefer to Port Arthur so that it will route:

Frisco H. & T. C. T. & NO.

until further instructions.

Yours truly,

(Signed) C. B. Ellis

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**Government's Exhibit 69.**

File F-1

Dec. 29, 1915.

Mr. W. P. Donovan, Supt. Gypsy Oil Co., Kiefer, Okla.

Dear Sir: Your letter Dec. 23rd, enclosing letter from Mr. Donohue, Agent, Frisco, with reference to routing of shipments for Port Arthur, for the present until further advise, via Frisco to Ashdown, KCS beyond. In checking up I find the time is practically the same via both routes, and as both the KCS and S. P. reach our refinery at Port Arthur, it is our intention to divide this business, and when it is equalized I will advise you when to begin routing Frisco S. P.

Yours truly,

CC—Mr. W. A. Looney

(Signed) C. B. Ellis

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**Government's Exhibit 71.**

GULF REFINING COMPANY

G. R. Nutty, Vice President

Frick Building Annex

Pittsburgh, Pa.

Cable Address  
"GULFOIL"

W. U. and A. B. C. Code  
4th & 5th Editions

Sales Department

Petroleum  
and Its Products

April 25th, 1916.

File F-1

Chas. B. Ellis, Traffic Manager

Mr. W. P. Donovan,

Supt., Gypsy Oil Company, Kiefer, Okla.

Dear Sir: Please refer to my letter of December 29th. File F-1. requesting that all shipments for Port Arthur be routed via Frisco to Ashdown—K. C. S. beyond until further orders.

This business has not yet been equalized. I would be glad to have you arrange to route two-thirds of the business via Frisco to Ashdown—K. C. S. beyond, and one-third by Frisco to Sherman—H. & T. C. to West Port Arthur. This to be continued until we have equalized the business between the two lines as it is our desire to give the Southern Pacific and Kansas City Southern an equal share of this business, both of which reach our refinery at Port Arthur.

Yours truly,

(Signed) C. B. Ellis.

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#### Government's Exhibit 74.

Uniform Bill of Lading—Standard form of Straight Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908.

St. Louis—San Francisco Railway Company

Straight Bill of Lading—Original—Not Negotiable—Shippers No. K-502 Agents No. . .

Received, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading, at Kiefer, Oklahoma, August 8th, 1917, from Gypsy Oil Co.—Gasoline Department, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed

hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The Rate of Freight from ..... to ..... is in Cents per 100 lbs. If Times 1st.... If 1st Class.... If 2nd class .... If Rule 25 .... If 3rd Class.... If Rule 26.... If Rule 28.... If 4th Class.... If 5th Class.... If 6th Class .... If Special per.... If Special per .... (Mail Address --Not for purposes of Delivery.)

Consigned to Gulf Refining Co., Destination, Pittsburgh, Shadyside Station, State of Pa. County of .... Route, Frisco to East St. Louis Ill. TSTL&W to Delphos Ohio, PRR to dest'n. Car Initial .... Car No. ....

No. Packages, 1 GRCX; Description of Articles and Special Marks, Tank car 1934, gasoline 8046 8046; Weight (Subject to Correction) 53103; Class or Check, Rate., Column ..

If charges are to be prepaid, write or stamp here, "To be Prepaid." ..... Received \$.. to apply in prepayment of the charges on the property described hereon. .... Agent or Cashier. Per ..... (The signature here acknowledges only the amount prepaid.) Charges Advanced: \$....

Certain rates are based on value of articles shipped. Where Classifications or Commodity Tariffs provide rates based on value, the value must be stated in space provided below and must be signed by shipper, or his agent (this signature being in addition to the signature in space provided in lower left hand corner of Bill of Lading).

Shipper hereby declares the value of property herein described to be ..... Shipper. Per .....

Gypsy Oil Co.—Gasoline Department. Shipper. Per W. Millard H. F. Bakkett, Agent Per OAR

(This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.)

(Rubber stamp) This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

Gypsy Oil Co.—Gasoline Dept. Shippers Per W. Millard Supt. H

Inflammable Placard applied and Dome Cover Caution Card.

**Government's Exhibit 75.**

(The A. T. & S. F. Ry. General Feb 10 '17 Agent  
Tulsa, Okla.)

**GYPSY OIL COMPANY**

Gasoline Department

W. P. Donovan, General Superintendent

Tulsa, Okla., February 9th, 1917.

Mr. P. T. McKirahan, General Agent,

A. T. & S. F. Railway Company, Tulsa, Oklahoma.

Dear Sir: In further reference to the gasoline loading rack track we intended to have constructed on your line at Drumright, Oklahoma, I now understand that your company will not permit the placing of gasoline loading racks within 400 feet of your main line. The Bureau of Explosives recommend loading racks be placed at least 100 feet from the main line, and I consider that distance ample under all ordinary conditions, and our Drumright loading rack track would not be an exception.

It seems to me that rules and regulations governing the shipment and handling of gasoline are laid down by railroads, and others, without giving the matter involved due consideration. I understand there are certain things permitted by the railroads in handling gasoline that reputable gasoline shippers would consider extremely dangerous, and on the other hand certain methods are used by gasoline shippers where the fire risk is considered by them very small and the railroads consider the risk extremely hazardous. A tank car of gasoline on fire 100 feet away from the main line would not likely endanger moving cars on that line. When gasoline is once ignited it is the easiest kind of an oil fire to control, as it is rarely ever leaves the container which holds it, whereas, a tank of crude oil on fire would boil over and probably spread the fire a great distance.

Would it not be possible for representatives of your company to meet with the Executive Committee of the Casinghead Gasoline Producers Association of America at a meeting to be held by them at Tulsa, Oklahoma, at 2 o'clock Friday afternoon, February 16th, 1917, to discuss the shipping of casinghead gasoline from all angles. I feel that nearly all of the gasoline shippers want to work in harmony with the railroads and do their part toward carrying the standard of safety to the highest point, but to ask them to build loading racks 400 feet away from a main line would be, in most cases, a physical impossibility, and in no instance, unless in a congested dis-

trict, would it add anything to the safety of the railroad company.

Very truly yours,

Gypsy Oil Company—Gasoline Dep't,

D-M

(Signed) W. P. Donovan, Gen'l Sup't.

Cy. A. J. Pfister. 811 South Boulder.

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**Government's Exhibit 76.**

File 12-29

Tulsa, November 10th, 1916.

Drumright, Okla: Proposed Spur for Gypsy Oil Company:  
Mr. J. R. Koontz,

General Freight Agent, Topeka, Kansas.

Dear Sir: Further replying to your letter, File R-2646, November 7th, above subject.

I have succeeded in getting a very conservative estimate from the Gypsy Oil Company, Gasoline Department, on the business which this new gasoline plant at Drumright will bring us.

They estimate that there will be shipped forty carloads of gasoline, per month, which will go to their refinery at Port Arthur, Texas. Inbound they estimate thirteen or fourteen carloads of naptha, per month, which will come from Port Arthur. These cars will average about 65,000 pounds to the car. I do not have the tariff showing the freight rate, but presume you have same in your office.

There has, or will be, about seven cars of cement and twenty-eight cars of stone from Dewey, and fourteen carloads of sand from Tulsa. This business would move intra-state, and we would only secure the haul from Jennings.

There will be four carloads of compressors from Painted Post, New York, and five carloads of gas engines from Grove City, Pennsylvania. There will also be twenty-one carloads of steel tanks, set-up, which will be shipped from Kansas City.

These people are very anxious to get this track constructed without any unnecessary delay, and would appreciate it very much if you will expedite the handling, and urge our operating officials to hurry to conclusion.

Yours truly,

(Signed) P. T. McKirahan

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**Government's Exhibit 77.**

220		Wednesday, December 6, 1916.		221
Cars	Keiffer	77.2	25+	1612
Cars	Keiffer	78.8	25+	1225
Cars	Keiffer	69.3	+16	368
Cars	Keiffer	66.1	+16	915
Cars	Keiffer	77.4	25+	1327
Cars	Keiffer	66.2	+15	1110

226		Friday, December 8, 1916.		227
Cars	Keiffer	77.6	25+	2012
Cars	Keiffer	77.4	25+	1114
Cars	Keiffer	78.1	25+	1250
Cars	Keiffer	77.3	25+	1395
Cars	Keiffer	77.8	25+	1201

228		Monday, December 11th, 1916.		229
511	Gasoline	60.7	25+	134-383
520	Gasoline	60.6		136-385
806	Gasoline	65.6	25+	105-378
857	Gasoline	60.8	25+	133-376
847	B. Solar	51.0	-21	
830	Gasoline Dist.	62.4	25+	132-346
856	Gasoline Dist.	61.7	25+	143-389
848	Gasoline Dist.	60.8	25+	134-378
855	Gasoline Dist.	63.7	25+	129-346
844	Painters Naptha	55.2	25+	238-407
849	Painters Naptha	55.0	25+	206-392
850	Painters Naptha	55.0	25+	228-410
838	Painters Naptha Dist.	54.8	25+	217-403
806	Heavy Crude Naptha	Mt	Mt	
813	Crude Naptha	57.7		
829	Crude Naptha	58.0		
883	Special Kerosene	50.9	80a 25+	
884	Special Kerosene	50.9	78a 25+	
801	100 Elliott	45.3	108 Ell -22	
860	Lusterlite	45.8	102a 21+	
842	Radium	45.1	130 TOC 22+	
85	Sunburst	45.9	103a 19+	
802	Sunburst	45.7	104a 18+	
803	Sunburst Dist.	46.6	86a	
808	Radium Dist.	44.6	134 TOC	
882	100 Elliott Dist.	45.7	107 Ell	
807	Sunburst S S Stock	48.3		
84	Lusterlite S S Stock	47.7		
804	Lusterlite S S Stock	47.6		
859	Lusterlite S S Stock	48.2		

1296 GULF REFINING COMPANY, A CORPORATION, vs.

858 Spec. Kero. Stk.	51.4			
837 Standard White	43.0			
11 Vinton Crude	) 20.5	1.3		
824 100 Elliott	) 45.6	108 Ell	340	-21 OK 0 Trace of floe.
841 Sunb.	) 46.5	87a	285	-21 OK 1 Trace of floe.
827 Radium	) 10 45.0	131 TOC	400	-25 OK 0
828 Lusterlite	) 45.8	96a	315	-22 OK No floe.
853 76 Abel	) 21.4	76a	95.5 percent	-25 OK
Barge Vinton Crude	) 19.4	.9		Warren
Barge Vinton Crude	) 19.7	.8		Nellie
Cars Keiffer	80.0)	12-10-16	25-	1763
Cars Keiffer	80.8)		25-	1239
Cars Keiffer	80.0)		25-	1607
Cars Keiffer	80.7)		25-	2006
Cars Keiffer	77.7)		25-	961
Cars Keiffer	79.9)		25-	1209
Cars Keiffer	80.3)	12-10-16	25-	1602
Cars Keiffer	79.8)		25-	1001
Cars Keiffer	80.8)		25-	1014
Barge Vinton Crude	19.5	1.0		Star
23 Okla Crude	36.2	.9 per cent		
13 Vinton Crude	20.9	1.1		From Warren & Nellie
13 Vinton Crude	20.2	1.3		From Barge Star
Barge Vinton Crude	19.9	.8 per cent		From Barge Arnold
Barge Vinton Crude	20.0	.9 per cent		From Barge Tyler
Car No. I. C.	33970	106 Drums C. asp. M.P.	244	
Car No. S. L. W.	12466	105 Drums C. asp. M.P.	244	
Car No. C. R. I. & P.	38891	105 Drums C. asp. M.P.	244	
Car No. B. O.	181287	29 Drums B. asp. M.P.	218	
Car No. B. O.	181287	78 Drums B. asp. M.P.	228	
Car No. I. & G.	3370	108 Drums B. asp. M.P.	228	
Car No. G. P.	16585	106 Drums C. asp. M.P.	254	
Car No. C. P.	212181	108 Drums B. asp. M.P.	218	
Car No. G. G.	16580	83 Drums C. asp. M.P.	254	
10 Drums C. asp. M.P.	244			
12 Drums C. asp. M.P.	242			
Drums Lusterlite	45.5	102a	22—	Local
709 Crude	41.9	Below 60 OC 0	.4	Residue 35 Spec.
710 Crude	42.0	Below 60 OC 0	.1	Residue 45 Spec.
711 Crude	34.3	Below 60 OC 15	2.6	Residue 40 Spec.
712 Crude	39.4	Below 60 OC 0	0.3	Residue 50 Spec.
713 Crude	34.9	Below 60 OC 10	.4	Residue 0 Spec.
714 Crude	30.7	Below 85 OC 15	1.1	Residue 20 Spec.
716 Crude	31.5	Below 60 OC 0	0.8	Residue Spec.
717 Crude	35.7	Below 60 OC 15	Trace	Residue Spec.
718 Crude	36.7	Below 60 OC 10	0.1	Residue Spec.
719 Crude	32.5	Below 60 OC 0	0.4	Residue Spec.
517 B Crude	42.2	Below 60 OC 0	0.8	Residue 50 Spec.
523 B Crude	30.1	Below 60 OC 0	1.8	Residue 0 Spec.
13 Vinton Crude	20.5		1.3	
Fillers 501 1 Cylinder	22.1	540 605 199	30	Pous
Bb's 4 Pale			161	46

Bbls.	3 Pale			216	60	
Bbls.	2 Pale			332	72	
Bbls.	Spec.	Red		523	270	
Drums	Signal	Oil	30.9 260	310	47	30/25
857	Gasoline	38370	60.7	25+		1027
857	Gasoline	38379	60.6	25+		1607
857	Gasoline	38403	60.6	25+		1001
857	Gasoline	38368	60.7	25+		1020
857	Gasoline	38577	60.7	25+		2006
857	Gasoline	38367	60.8	25+		208
857	Gasoline	37376	60.7	25+		623 A
857	Gasoline	37376	60.7	25+		623 B
857	Gasoline	37376	60.7	25+		623 C
857	Gasoline	38369	60.7	25+		1445
857	Gasoline	38366	60.8	25+		305
857	Gasoline	38353	60.8	25+		1395
857	Gasoline	38354	60.7	25+		1308
857	Gasoline	38355	60.7	25+		1500
857	Gasoline	38356	60.8	25+		1034
857	Gasoline	38364	60.7	25+		915
857	Gasoline	38365	60.8	25+		2011
860	Lusterlite	38342	45.9 100a	21+		1155
860	Lusterlite	38296	45.9 100a	21+		2012
825	Lust.—		46.0 79a	315	+24 OK 1 Lt.	trace
Barge	Vinton Crude		19.6 1.0 per cent	Batson		
13	Vinton Crude		20.3 1.3	From Batson		
26	Okla Crude		36.2 0.5			
41	28 Gas Oil		30.1 174 0.1	Elvista		
1153	123½—	.30-510				
1121	124 —	(.30-510				
		(1.0-510				
		(.20-200				
1124	121 —	(.30-516				
		(.50-500				
1125	129¾—	.50-500				
1126	130¾—	.50-500				
1091	122 —	.50-500				

238	Friday December 15, 1916.	239
511	Gasoline	60.6 25+ 135-385
520	Gasoline	60.6 25+ 132-380
805	Gasoline	63.4 25+ 112-380
857	Gasoline	60.7 25+ 140-371

266	Friday, December 29, 1916.	267
Car	Kieffer	79.9 25+ 1066
Car	Kieffer	79.7 25+ 1040
Car	Kieffer	79.3 25+ 329

1298 GULF REFINING COMPANY, A CORPORATION, vs.

272	January 1, 1917.				273
Car	Kiefer	77.6	25+	76/350	1030

274	Wednesday, January 3, 1917.				275
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511	Gasoline	59.7	25+	O.K.	
520	Gasoline	60.4	25+	O.K.	139-383
805	Gasoline	65.0	25+	O.K.	117-360
857	Gasoline	60.8	25+	O.K.	140-372
329	Crude Naphtha	57.2			

276					277
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Car	Kiefer	76.8	25+		1384
Car	Kiefer	76.7	25+		1111
Car	Kiefer	76.6	25+		242
Car	Kiefer	76.6	25+		309
Car	Kiefer	76.5	25+		1619
Car	Kiefer	76.4	25+		410

286	Monday, January 8, 1917.				287
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857	Gasoline	38807	60.6	25+	1225
338	Gasoline	7626	54.7	25+	1359
938	Gasoline	7626	55.0	25+	2008
838	Gasoline	7626	55.0	25+	328
838	Gasoline	7626	54.9	25+	1153
838	Gasoline	7626	54.7	25+	1385
338	Gasoline	7626	54.8	25+	445

286					287
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Cars	Keiffer	81.2	25+		427
Cars	Keiffer	79.4	25+		1331
Cars	Keiffer	78.3	25+		1006
Cars	Keiffer	81.3	25+		1206
Cars	Keiffer	78.8	25+		1038
Cars	Keiffer	79.4	25+		1148
Cars	Keiffer	81.2	25+		1397
Cars	Keiffer	81.7	25+		1026
Cars	Keiffer	79.3	25+		325
Cars	Keiffer	79.4	25+		1228

290	Wednesday, January 10, 1917.				291
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Cars	Keiffer	80.4		Car No.	1136
Cars	Keiffer	79.6		Car No.	422
Cars	Keiffer	79.7		Car No.	1763

UNITED STATES OF AMERICA.

1299

Cars	Keiffer	80.4	Car No.	1079
Cars	Keiffer	81.5	Car No.	1054
Cars	Keiffer	80.4	Car No.	1602
Cars	Keiffer	79.4	Car No.	1100
Cars	Keiffer	79.9	Car No.	1612
Cars	Keiffer	81.5	Car No.	1211
Cars	Keiffer	81.3	Car No.	1232
Cars	Keiffer	79.2	Car No.	1220
Cars	Keiffer	79.7	Car No.	1681
Cars	Keiffer	80.2	Car No.	2016

300

Monday, January 15, 1917.

301

Cars	Kiefer	81.5	25+	1387
Cars	Kiefer	81.5	25+	920
Cars	Kiefer	81.5	25+	1208
Cars	Kiefer	80.6	25+	1327
Cars	Kiefer	81.8	25+	309
Cars	Kiefer	82.4	25+	2020
Cars	Kiefer	83.4	25+	973
Cars	Kiefer	83.3	25+	961
Cars	Kiefer	79.0	25+	1024
Cars	Kiefer	83.8	25+	2006
Cars	Kiefer	81.9	25+	1619
Cars	Kiefer	81.2	25+	1500
Cars	Kiefer	82.2	25+	1111
Cars	Kiefer	81.2	25+	437

306

Friday, January 19, 1917.

307

511	Gasoline	62.4	25+	128-380
520	Gasoline	MT		MT
805	Gasoline	62.8	25+	99-375
857	Gasoline	62.5	25+	126-355
829	Crude Naphtha	55.9		

308

309

Cars	Keiffer	83.8	25+	1278
Cars	Keiffer	82.8	25+	2025
Cars	Keiffer	83.0	25+	428
Cars	Keiffer	83.7	25+	1347

312

Monday, January 22, 1917.

313

Cars	Keiffer	80.4	25+	1116
Cars	Keiffer	79.9	25+	1301
Cars	Keiffer	80.5	25+	222

1302 GULF REFINING COMPANY, A CORPORATION, vs.

838	Ptrs. Nap.	7626	55.0	25+	168
838	Ptrs. Nap.	7626	55.0	25+	1763

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152 Tuesday, December 19, 1916. 153

511	Gasoline	60.6	25+	133-392
520	Gasoline	60.7	25+	128-383
805	Gasoline	63.1	25+	129-381
857	Gasoline	60.7	25+	134-380
829	Crude Naphtha	56.7		

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154 Page 155

Cars	Kiefer	79.7	25+	621 B & C
Cars	Kiefer	79.4	25+	1113
Cars	Kiefer	79.3	25+	1378
Cars	Kiefer	79.2	25+	1621
Cars	Kiefer	78.8	25+	437
Cars	Kiefer	78.7	25+	1143
Cars	Kiefer	78.6	25+	1039
Cars	Kiefer	78.2	25+	621 A

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164 Saturday, December 23, 1916. 165

Car	Keifer	77.6	25+	1360
Car	Keifer	77.4	18+	957

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172 Tuesday, December 26, 1916. 173

838	Ptrs Naptha	7626	54.9	25+	1116
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174 Thursday, December 28, 1916. 175

Cars	Keifer	79.4	25+	1613
Cars	Keifer	79.3	25+	1239
Cars	Keifer	79.1	25+	1225

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196 Saturday, January 6, 1917. 197

Car	Kiefer	78.4	25+	1385
Car	Kiefer	78.6	25+	1080
Car	Kiefer	78.5	25+	445

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204 Thursday, January 11, 1917. 205

511	Gasoline	60.4	25+	130-393
520	Gasoline	MT		MT

## UNITED STATES OF AMERICA.

1303

805	Gasoline	62.1	25+	103-392
857	Gasoline	63.0	25+	120-374
829	Crude Naphtha			

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206 207

Car	Kiefer	80.4		1136
	Kiefer	80.2		2016
	Kiefer	81.5		1054
	Kiefer	79.4		1100
	Kiefer	81.3		1232
	Kiefer	81.5		1211
	Kiefer	80.4		1079
	Kiefer	79.7		1763
	Kiefer	79.7		168
	Kiefer	80.4		1602
	Kiefer	79.2		1220
	Kiefer	79.6		422

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214 Tuesday, January 16, 1917. 215

511	Gasoline	62.4	25+	
520	Gasoline	MT		MT
805	Gasoline	61.0	25+	
857	Gasoline	61.7	25+	
829	Crude Naphtha	56.8		

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234 Thursday, January 25, 1917. 235

511	Gasoline	60.8	25+	112-375
520	Gasoline	60.4	25+	118-382
805	Gasoline	62.3	25+	113-357
857	Gasoline	MT		MT
829	Crude Naphtha	55.4		

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236 237

Cars	Keiffer	80.2	25+	2008
Cars	Keiffer	80.2	25+	1153
Cars	Keiffer	80.6	25+	1620
Cars	Keiffer	80.8	25+	368
Cars	Keiffer	80.2	25+	953
Cars	Keiffer	80.3	25+	1359
Cars	Keiffer	80.7	25+	1718
Cars	Keiffer	80.1	25+	1055
Cars	Keiffer	80.1	25+	328

## 1304 GULF REFINING COMPANY, A CORPORATION, VS

250	Thursday, February 1, 1917.				251
Cars	Keiffer	81.2	25+		2016
Cars	Keiffer	81.5	25+		168
Cars	Keiffer	81.8	25+		1384
Cars C	Keiffer	81.7	25+		622
Cars B	Keiffer	77.5	25+		622
Cars A	Keiffer	81.1	25+		622
Cars C	Keiffer	80.4	25+		620
Cars B	Keiffer	80.2	25+		620
Cars A	Keiffer	81.3	25+		620
Cars C	Keiffer	81.5	25+		615
Cars B	Keiffer	81.6	25+		615
Cars A	Keiffer	81.9	25+		615
<hr/>					
258	Saturday, February 3, 1917.				259
Cars	Keiffer	81.0	25+		445
Cars	Keiffer	81.5	25+		1261
Cars	Keiffer	81.1	25+		1360
<hr/>					
260	Tuesday, February 6, 1917.				261
511	Gasoline	60.9			
520	Gasoline	MT			
805	Gasoline	61.5			
829	Crude Naphtha	46.6			
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264					265
Cars	Keiffer	79.4	25+		2013
Cars	Keiffer	80.0	25+		2010
Cars	Keiffer	81.8	25+		329
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282	Thursday, February 15, 1917.				283
Cars	Keiffer	80.8	25+		1347
Cars	Keiffer	80.9	25+		913
Cars A	Keiffer	80.2	25+		617
Cars c	Keiffer	80.8	25+		617
Cars B	Keiffer	80.5	25+		617
Cars	Keiffer	80.3	25+		1131
Cars	Keiffer	80.4	25+		1080
Cars	Keiffer	80.7	25+		335
Cars	Keiffer	80.6	25+		309
Cars	Keiffer	80.7	25+		1111
Cars	Keiffer	80.5	25+		169
Cars	Keiffer	80.6	25+		242
Cars	Keiffer	80.8	25+		1506
Cars	Keiffer	80.5	25+		150

290	Tuesday, February 20, 1917.				291
Car	Keiffer	79.2	25+	NG	1387
Car	Keiffer	79.6	25+	NG	1620
Car	Keiffer	80.1	25+	NG	392
Car	Keiffer	80.0	25+	NG	426
Car	Keiffer	78.6	25+	NG	1261
Car	Keiffer	80.1	25+	NG	900
Car	Keiffer	79.8	25+	NG	1211
Car	Keiffer	79.8	25+	NG	1445
Car	Keiffer	76.9	25+	NG	1356
Car	Keiffer	78.5	25+	NG	1319

296	Thursday, February 22, 1917.				297
Car	Keiffer	79.5	25+		2008
Car	Keiffer	79.6	25+		1370
Car	Keiffer	79.7	25+		953
Car	Keiffer	78.6	25+		445
Car	Keiffer	79.0	25+		1153
Car	Keiffer	79.3	25+		1114
Car	Keiffer	79.2	25+		1384
Car	Keiffer	78.3	25+		1278
Car	Keiffer	78.0	25+		1619
Car	Keiffer	79.0	25+		1026
Car	Keiffer	79.7	25+		629
Car	Keiffer	79.9	25+		985
Car	Keiffer	78.8	25+		434

336	Tuesday, March 13, 1917.				337
					Over Dry
520	Navy Gasoline	64.2	25+		130-345
511	Gasoline	60.4	25+		130-388
305	Gasoline	63.1	25+		110-360
857	Navy Gasoline	63.6	25+		127-360
829	Crude Naphtha	56.0			

340					341
Car	Keiffer	76.5	25+		1021
Car	Keiffer	77.1	25+		242
Car	Keiffer	77.4	25+		1178
Car	Keiffer	77.7	25+		1150- 434
Car	Keiffer	77.8	25+		1082
Car	Keiffer	77.9	25+		1385
Car	Keiffer	78.1	25+		335
Car	Keiffer	78.4	25+		1006-1507

## 1306 GULF REFINING COMPANY, A CORPORATION, vs.

Car	Keiffer	78.9	25+	1024- 950
Car	Keiffer	79.2	25+	1620

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346 Saturday, March 17, 1917. 347

520	Navy Gasoline	63.3	25+	126-366
511	Gasoline	61.6	25+	110-368
805	Gasoline	63.3	25+	120-364
857	Navy Gasoline	63.4	25+	130-364
829	Crude Naphtha	55.7		

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346 347

Cars	Keiffer	78.8	25+	1609
Cars	Keiffer	79.6	25+	1038
Cars	Keiffer	78.4	25+	1206

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350 Tuesday, March 20, 1917. 351

520	Navy Gasoline	63.2	25+	128-370
511	Gasoline	61.6	25+	120-386
805	Gasoline	62.8	25+	120-368
857	Navy Gasoline	63.3	25+	130-354
829	Crude Naphtha	56.2		

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352 353

Car	Keiffer	79.4	25+	1052
Car	Keiffer	80.4	25+	2014
Car	Keiffer	76.9	25+	2016
Car	Keiffer	78.5	25+	1112
Car	Keiffer	78.5	25+	1272
Car	Keiffer	79.3	25+	1029
Car	Keiffer	78.9	25+	1148
Car	Keiffer	78.6	25+	1068
Car	Keiffer	78.7	25+	A623
Car	Keiffer	77.4	25+	B623
Car	Keiffer	78.3	25+	C623
Car	Keiffer	78.7	25+	A614
Car	Keiffer	77.6	25+	B614
Car	Keiffer	78.7	25+	C614
Car	Keiffer	76.3	25+	A621
Car	Keiffer	77.7	25+	B621
Car	Keiffer	78.2	25+	C621
Car	Keiffer	80.3	25+	1049
Car	Keiffer	78.6	25+	2022
Car	Keiffer	78.3	25+	251

## UNITED STATES OF AMERICA.

1307

366	Tuesday, March 27, 1917.			367
Car	Keiffer	79.4	25+	2024
Car	Keiffer	78.2	25+	1114
Car	Keiffer	78.1	25+	335
Car	Keiffer	79.2	25+	1135
Car	Keiffer	79.4	25+	1207
Car	Keiffer	78.3	25+	1006
Car	Keiffer	78.1	25+	2025
Car	Keiffer	79.1	25+	950
Car	Keiffer	76.3	25+	985
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370	Thursday, March 29, 1917.			371
Car	Keiffer	77.5	25+	1156
Car	Keiffer	78.1	25+	368
Car	Keiffer	76.8	25+	1228
Car	Keiffer	77.3	25+	1041
Car	Keiffer	77.2	25+	408
Car	Keiffer	78.4	25+	1257
Car	Keiffer	80.5	25+	1333
Car	Keiffer	80.0	25+	1270
Car	Keiffer	77.6	25+	2019

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## Government's Exhibit 80.

NOV.—1916.

Car number and Initial.	THEIR BILLING.		Into Tank No.	Temp.	Gravity.	Net Gallons.	OUR RECEIPTS.			Temp.	Net Gallons.
	Date	Gross Gallons.					Outage.	Cross Gallons.	Color.		
	Unloaded.										
GRCX 1608	11/3/16	8,020	838	58°	76.6	8,030	4-1/2"	7,858	25	70°	7,906
2021	11/3/16	8,152	838	58	75.8	8,163	6	7,863	25	70	7,811
1024	11/9/16	8,145	838	62	77.5	8,134	9	7,664		70	7,613
1034	11/9/16	8,201	838	63	78.5	8,185	4	8,054		70	8,000
1239	11/9/16	8,099	838	62	78.0	8,089	5	7,897		70	7,844
1355	11/9/16	8,090	838	68	77.8	8,047	8	7,759		70	7,707
1366	11/9/16	8,093	838	66	78.3	8,061	6	7,830	25	70	7,778
1131	11/9/16	8,138	838	69	76.3	8,052	9	7,616		70	7,565
1247	11/9/16	8,093	838	62	77.2	8,083	10	7,535		70	7,485
1352	11/9/16	8,095	838	68	77.0	8,052	4	7,950		70	7,897
1385	11/9/16	8,092	838	66	76.4	8,060	8	7,960		70	7,639
1600	11/9/16	8,013	838	64	77.0	7,992	10	7,493		70	7,443
2029	11/9/16	8,152	838	65	76.0	8,125	10	7,541		70	7,491
973	11/10/16	8,056	838	66	77.1	8,006	8	7,656	25	68	7,615
1017	11/10/16	8,148	838	68	76.0	8,105	10	7,586	25	68	7,546
1237	11/9/16	8,099	838	68	77.8	8,056	4	7,954		70	7,901
1251	11/9/16	8,096	838	66	77.5	8,064	4	7,951		70	7,898
1397	11/10/16	8,099	838	66	77.4	8,067	3	8,005	x21	68	7,962
1718	11/9/16	8,103	838	68	76.9	8,060	6	7,842		70	7,790
222	11/10/16	6,530	838	64	77.7	6,513	4	6,398	25	68	6,364

242	11/10/16	6,517	838	62	77.6	6,508	25	3	6,432	68	6,398
251	11/10/16	6,510	838	62	77.2	6,502	25	4	6,378	68	6,344
915	11/15/16	8,057	805	62	77.2	8,028	25	7	7,727	40	7,830
1143	11/10/16	8,371	838	66	76.1	8,301	25	6	8,075	68	8,032
1245	11/10/16	8,096	838	66	77.6	8,064	25	5	7,894	68	7,852
1602	11/10/16	8,023	838	68	77.8	7,981	25	3	7,936	68	7,894
1619	11/10/16	8,016	838	66	77.8	7,985	25	4	7,881	68	7,839
368	11/15/16	7,076	805	64	75.7	7,027	25	6	6,826	40	6,917
1225	11/15/16	8,095	805	62	77.1	8,084	25	5	7,893	40	7,998
1347	11/15/16	8,090	805	63	77.2	8,074	25	6	7,827	40	7,931
1066	11/18/16	8,158	805	60	78.6	8,158	25	3	8,063	66	8,031
1080	11/15/16	8,185	805	66	77.4	8,153		6	7,919	54	7,95
1301	11/15/16	8,093	805	64	77.7	8,072		5	7,891	54	7,923
2010	11/15/16	8,150	805	56	78.6	8,172		9	7,627	54	7,656
1020	11/15/16	8,191	805	62	77.9	8,180		8	7,784	54	7,815
1208	11/15/16	8,083	805	64	77.9	8,062		4	7,938	54	7,970
1319	11/15/16	8,096	805	59	78.2	8,101		5	7,894	54	7,926
392	11/18/16	7,017	805	62	77.3	7,008	25	4	6,917	66	6,889
150	11/18/16	8,000	805	46	78.0	7,971	25	3	7,907	66	7,875
309	11/18/16	6,662	805	48	78.3	6,610	25	4	6,532	66	6,506
900	11/18/16	8,055	805	48	78.7	8,030	25	4	7,911	66	7,879
1616	11/18/16	8,017	805	50	77.9	7,987	25	8	7,642	66	7,611
1621	11/18/16	8,016	805	48	77.8	7,986	25	7	7,708	66	7,677
1037		8,191		52	81.5	8,191	25	4	8,044	66	8,012
2011		8,152		54	79.2	8,184	25	3	8,048	66	8,016
1082		8,144		50	78.9	8,198	25	6	7,879	66	7,847
1278		8,092		54	79.0	8,124		6	7,829	66	7,797

NOV., 1916—Continued.

Car number and Initial.	THEIR BILLING.			OUR RECEIPTS.				Net Gallons.
	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Gravity.	Net Gallons.	Outage.	
GRCX 218	11/29/16	6,542	805	48°	79.1	6,594	25 3"	66°
2018	11/29/16	8,150	805	42	79.1	8,166	25 10	62
1036	11/29/16	8,220	805	40	79.0	8,232	25 8	62
						<u>394,677</u>		<u>381,334</u>

50	Their billing.....	394,677
Our file.	Our receipts.....	381,334
	Difference.....	<u>13,343</u>

DEC.—1916.

Car number and Initial.	THEIR BILLING.		OUR RECEIPTS.				Net	
	Date	Gross Gallons.	Into Tank No.	Temp.	Gravity.	Gallons.	Net Gallons.	Temp.
GRCX 1603	12/2/16	8,018	805	56°	79.4	8,039	7,643	68°
936	12/2/16	8,058	805	56	79.7	8,060	7,502	68
913	12/2/16	8,056	805	44	80.6	8,122	7,855	68
1359	12/2/16	8,086	805	44	79.7	8,076	7,992	68
1366	12/2/16	8,093	805	46	80.3	8,073	7,891	68
2013	12/2/16	8,148	805	48	79.8	8,132	7,860	68
2019	12/2/16	8,147	805	50	78.6	8,120	8,044	68
368	12/5/16	7,076	805	52	69.3	7,000	7,076	70
915	12/5/16	8,057	805	46	66.1	8,038	8,057	70
1110	12/5/16	8,134	805	50	66.2	8,084	8,134	70
1225	12/5/16	8,095	805	46	78.8	8,075	7,185	70
1327	12/5/16	8,096	805	44	77.4	8,087	7,367	70
1612	12/5/16	8,023	805	46	77.2	8,013	7,174	70
422	12/5/16	7,044	805	54	77.9	6,362	6,914	70
1078	12/5/16	8,129	805	56	77	8,056	7,983	70
1144	12/5/16	8,130	805	56	75.8	8,048	7,608	70
1233	12/5/16	8,092	805	56	77.4	8,019	7,891	70
1237	12/5/16	8,099	805	54	77	8,037	8,005	70
1061	12/5/16	8,180	805	54	77.2	8,117	7,914	70
961	12/10/16	8,056	805	54	77.7	7,995	7,331	60
1114	12/8/16	8,136	805	55	77.4	8,082	7,697	58
1201	12/8/16	8,082	805	56	77.8	8,008	7,819	58

UNITED STATES OF AMERICA.

1311

DEC., 1916—Continued.

Car number and Initial.	THEIR BILLING.			OUR RECEIPTS.							
	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Gravity.	Net Gallons.	Color.	Outage.	Gross Gallons.	Temp.	Net Gallons.
GRCX 1250	12/8/16	8,098	805	56°	78.1	8,033	25	8"	7,696	58°	7,706
1395	12/8/16	8,096	805	55	77.3	8,028	25	12	7,367	58	7,377
2012	12/8/16	8,147	805	52	77.6	8,110	25	10	7,537	58	7,547
1218	12/15/16	8,095	805	54	79.5	8,033		10	7,536	54	7,566
2022	12/15/16	8,150	805	48	79.3	8,134		8	7,712	54	7,743
1001	12/10/16	8,158	805	56	79.8	8,086	25	8	7,753	60	7,753
1014	12/10/16	8,161	805	54	80.8	8,098	25	4	8,015	60	8,015
1072	12/15/16	8,138	805	54	79.4	8,078		8	7,734	54	7,765
1209	12/10/16	8,092	805	56	79.9	8,019	25	8	7,690	60	7,690
1239	12/10/16	8,099	805	54	80.8	8,033	25	8	7,696	60	7,696
1602	12/10/16	8,023	805	56	80.3	7,951	25	6	7,779	60	7,779
1607	12/10/16	8,016	805	54	80	7,954	25	11	7,420	60	7,420
1763	12/10/16	8,100	805	52	80	8,048	25	6	7,839	60	7,839
2006	12/10/16	8,146	805	56	80.7	8,087	25	6	7,858	60	7,858
437	12/19/16	8,137	805	50	78.8	8,071	25	8	7,733	72	7,671
621	12/19/16	8,005	805	52	79.2	7,954	25	8-A-2518			
					79.7		25	6-B-2633			
					79.7		25	5-C-2568			
1039	12/19/16	8,157	805	58	78.6	8,072	25	5	7,719	72	7,657
1143	12/19/16	8,371	805	56	78.7	8,059	25	4	7,954	72	7,890
1113	12/19/16	8,139	805	56	79.4	8,031	25	6	8,208	72	8,142
1378	12/19/16	8,093	805	56	79.3	8,020	25	6	7,851	72	7,788
							25		7,830	72	7,767

7,281	72	7,340	25	12	7,954	79.2	54	805	8,016	12/19/16	1621
7,648	62	7,658	18x	8	8,049	77.1	44	805	8,058	12/23/16	957
7,680	62	7,690	25	8	8,082	77.6	44	805	8,092	12/23/16	1360
8,060	58	8,049	25	3	8,124	77.6	46	805	8,143	1/3/17	1030
7,971	56	7,950	25	4	8,086	79.1	44	805	8,095	12/28/16	1225
8,068	56	8,047	25	2	8,080	79.3	46	805	8,099	12/28/16	1239
6,808	58	6,799	25	6	7,057	79.3	34	805	7,049	12/29/16	329
8,073	58	8,062	25	4	8,276	79.7	30	805	8,209	12/29/16	1040
7,904	58	7,893	25	6	8,214	79.9	32	805	8,158	12/29/16	1066
7,662	56	7,642	25	8	8,061	79.4	34	805	8,107	12/28/16	1613
399,904					415,525						

Their billing.....	415,525
Our receipts.....	399,904
Difference.....	15,621



2016	1/11/17	8,153	805	40	80.2	8,181			1	3	7,056	56	7,075
325	1/8/17	6,670	805	48	79.3	6,638	25		8	8	6,310	66	6,285
427	1/8/17	8,153	805	47	81.2	8,103	25		10		7,590	66	7,560
1006	1/8/17	8,128	805	48	78.3	8,098	25		8	8	7,724	66	7,693
1026	1/8/17	8,173	805	46	81.7	8,154	25		8	8	7,767	66	7,736
1038	1/8/17	8,151	805	52	78.8	8,099	25		10		7,589	66	7,559
1148	1/8/17	8,130	805	48	79.4	8,091	25		8	8	7,691	66	7,660
1206	1/8/17	8,089	805	46	81.3	8,070	25		8	8	7,687	66	7,656
1228	1/8/17	8,089	805	47	79.4	8,064	25		10		7,531	66	7,501
1331	1/8/17	8,092	805	52	79.4	8,041	25		6	6	7,829	66	7,798
1397	1/8/17	8,099	805	46	81.2	8,080	25		1	2	7,189	66	7,160
961	1/16/17	8,056	805	44	83.3	8,048	25		1	1	7,242	46	7,310
973	1/16/17	8,056	805	46	83.4	8,037	25		10		7,500	46	7,570
1024	1/16/17	8,145	805	44	79	8,137	25		8	8	7,740	46	7,812
1327	1/16/17	8,096	805	44	80.6	8,087	25		10		7,537	46	7,607
2006	1/16/17	8,146	805	46	83.9	8,141	25		8	8	7,706	46	7,778
428	1/19/17	8,175	805	44	83.0	8,142	25		8	8	7,769	50	7,821
1278	1/19/17	8,097	805	46	83.8	8,078	25		8	8	7,690	50	7,741
1347	1/19/17	8,090	805	45	83.7	8,076	25		6	6	7,827	50	7,879
2025	1/19/17	8,153	805	44	82.8	8,159	25		6	6	7,864	50	7,916
309	1/16/17	6,662	805	45	81.8	6,642	25		6	6	6,426	46	6,486
437	1/16/17	8,137	805	48	81.2	8,107	25		6	6	7,873	46	7,946
920	1/16/17	8,057	805	44	81.5	8,048	25		6	6	7,795	46	7,868
1111	1/16/17	8,137	805	50	82.2	8,087	25		6	6	7,849	46	7,922
1208	1/16/17	8,083	805	50	81.5	8,042	25		8	8	7,681	46	7,753
1387	1/16/17	8,095	805	48	81.5	8,065	25		8	8	7,693	46	7,765
1500	1/16/17	12,029	805	49	81.2	11,999	25		6	6	11,696	46	11,805

JAN., 1917—Continued.

Car number and Initial.	THEIR BILLING.			OUR RECEIPTS.					Net Gallons.
	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Gravity.	Net Gallons.	Color.	Outage.	
GRCX 1619	1/16/17	8,016	805	46°	81.9	7,997	25	8"	7,712
2020	1/16/17	8,149	805	50	82.4	8,123	25	6	7,934
629	1/29/17	7,604	805	44	78.8	7,612	25-A-2391	8	
					78.5		25-B-2359	10	
					78.6		25-C-2319	11	7,078
1356	1/29/17	8,093	805	46	78.8	8,074	25	10	7,545
1358	1/29/17	8,092	805	46	79.2	8,073	25	1	7,192
222	1/22/17	6,530	805	32	80.5	6,585	25	6	6,307
1055	1/25/17	8,157	805	30	80.1	8,224	25	3	8,062
1116	1/22/17	8,090	805	30	80.4	8,147	25	4	7,953
1301	1/22/17	8,093	805	32	79.9	8,148	25	6 1/2	7,818
368	1/25/17	7,076	805	32	80.8	7,093	25	8"	6,703
953	1/5/17	8,060	805	32	80.2	8,116	25	4	7,927
1620	1/25/17	8,020	805	32	80.6	8,080	25	3	7,944
1718	1/21/17	8,103	805	31	80.7	8,165	25	6	7,852
328	1/25/17	7,062	805	32	80.1	7,080	25	5	6,880
1153	1/25/17	8,130	805	34	80.2	8,140	25	5	7,921
1359	1/25/17	8,086	805	32	80.3	8,141	25	2	8,045
2008	1/25/17	8,148	805	32	80.2	8,219	25	6	7,858
1155	1/29/17	8,130	805	42	81.1	8,134	25	1' 0	7,347
1225	1/29/17	8,095	805	42	79.6	8,097	25	1	7,287
1243	1/29/17	8,093	805	42	79.9	8,095	25	11	7,461

1397	1/31/17	8,099	805	40	79.2	8,112	10	7,540	58	7,550
2027	1/29/17	8,149	805	40	79.7	8,177	10	7,539	58	7,549
						<u>559,232</u>				

FEB.—1917.

## OUR RECEIPTS.

Car number and Initial.	THEIR BILLING.		Into Tank No.	Temp.	Gravity.	Net Gallons.	Color.	Gross		Net Gallons.
	Date	Gross Gallons.						Outage.	Temp.	
GROX 445 2013 2010 1366 168 615	Unloaded.							4"	62°	7,983
	2/4/17	8,140	805	34°	81.0	8,133	25	7	7,994	7,983
	2/6/17	8,148	805	36	79.4	8,198	25	3	8,046	7,796
	2/6/17	8,150	805	36	80.6	8,200	25	6	7,830	8,057
	2/4/17	8,093	805	42	81.1	8,095	25	4	6,878	7,820
620	2/1/17	7,016	805	51	81.5	6,915	25	4		6,887
	2/1/17	8,006	805	52	81.9	7,955	25-A-2621	6		7,833
					81.6		25-B-2611	4		
					81.5		25-C-2591	8		
	2/1/17	8,018	805	52	81.3	7,967	25-A-2564	3		7,863
622					80.2		25-B-2708	4		
					80.4		25-C-2581	4		
	2/1/17	8,015	805	54	81.1	7,954	25-A-2617	3		7,880
					77.5		25-B-2678	5		7,839
					81.7		25-C-2575	6		7,869
1384 2016 1261 1156 985 1207 329	2/1/17	8,092	805	52	81.8	8,041	25	6	7,870	7,880
	2/1/17	8,147	805	50	81.2	8,121	25	6	7,829	7,839
	2/4/17	8,093	805	46	81.5	8,074	25	5	7,859	7,869
	2/11/17	8,130	805	56	78.0	8,048	25	4	7,971	7,880
	2/7/17	8,055	805	54	79.8	7,994	25	3	7,962	7,960
	2/7/17	8,090	805	52	78.8	8,039	25	4	7,945	7,951
	2/7/17	8,090	805	52	78.8	8,039	25	4	7,945	7,934
	2/6/17	7,049	805	30	81.8	7,099	25	4	6,912	6,921

## UNITED STATES OF AMERICA.

1319

1237	2/14/17	8,099	805	38	79.0	8,122	25	4	7,954	66	7,922
1065	2/9/17	8,131	805	36	81.2	8,165	25	3	8,037	64	8,016
1068	2/9/17	8,137	805	34	80.8	8,182	25	8	7,733	64	7,712
1321	2/9/17	8,089	805	36	80.6	8,123	25	4	7,944	64	7,923
2022	2/9/17	8,152	805	34	81.2	8,212	25	Full	8,152	64	8,130
309	2/15/17	6,662	805	31	80.6	6,705	25	5	6,482	62	6,473
621	2/12/17	8,005	805	30	79.8	8,070	25-A-2564	6			
					80.3		25-B-2586	8			
					80.3		25-C-2503	8			
934	2/12/17	8,061	805	30	76.9	8,127	25	8	7,653	62	7,643
1331	2/12/17	8,092	805	30	80.3	8,159	25	8	7,660	62	7,650
236	2/14/17	6,509	805	42	78.9	6,520	25	6	7,829	62	7,819
960	2/14/17	8,061	805	40	78.7	8,074	25	3	6,424	66	6,398
1015	2/14/17	8,183	805	40	79.9	8,196	25	6	7,799	66	7,768
1144	2/14/17	8,130	805	42	78.5	8,123	25	8	7,776	66	7,745
1462	2/4/17	8,093	805	42	79.2	8,095	25	10	7,521	66	7,491
150	2/5/17	8,000	805	36	80.5	8,033	25	8	7,691	66	7,660
169	2/15/17	7,016	805	37	80.5	6,980	25	Full	8,000	62	7,989
335	2/15/17	7,054	805	37	80.7	7,071	25	6	6,766	62	6,767
913	2/15/17	8,056	805	37	80.9	8,086	25	4	6,916	62	6,907
1080	2/15/17	8,185	805	43	80.4	8,182	25	6	7,794	62	7,784
1239	2/4/17	8,099	805	42	78.7	8,101	25	4	8,038	62	8,027
1620	2/20/17	8,020	805	44	79.6	8,017	25	3	8,005	66	7,973
242	2/15/17	6,517	805	34	80.6	6,564	25	6	7,776	66	7,745
617	2/15/17	7,974	805	32	80.2	8,008	25-A-2553	3	6,432	62	6,423
					80.5		25-B-2682	5			
					80.8		25-C-2541	5	7,776	62	7,766



## UNITED STATES OF AMERICA.

1321

1027	2/26/17	8,179	805	36	79.6	8,214	25	8	7,773	66	7,742
1136	2/26/17	8,144	805	36	79.4	8,169	25	10	7,582	66	7,552
1278	2/20/17	8,092	805	38	78.3	8,115	25	12	7,364	68	7,325
2016	2/26/17	8,153	805	32	78.8	8,224	25	1	7,042	68	7,004
434	2/22/17	8,180	805	40	78.6	8,141	25	10	7,616	68	7,575
1029	2/26/17	8,225	805	40	78.9	8,238	25	11	7,573	66	7,543
1153	2/22/17	8,130	805	39	79.0	8,139	25	10	7,569	68	7,529
1243	2/26/17	8,093	805	40	79.1	8,106	25	11	7,451	66	7,421
2008	2/22/17	8,148	805	40	79.5	8,176	25	8	7,708	68	7,667
1026	2/20/17	8,173	805	39	79.0	8,191	25	10	7,609	68	7,568
1610	2/26/17	8,017	805	42	78.3	8,025	25	10	7,497	66	7,467
1036	2/26/17	8,220	805	40	78.3	8,233	25	7	7,884	66	7,854
1082	2/26/17	8,144	805	39	78.9	8,163	25	11	7,498	66	7,468
622	2/20/17	8,015	805	34	79.7	8,061	25	12			
							25-A-2425	11			
							-B-2494	11			
							-C-2403	12			
916	2/20/17	8,059	805	30		8,117		12	7,222	68	7,183
953	2/20/17	8,060	805	42	79.7	8,063	25	10	7,503	68	7,463
1114	2/20/17	8,136	805	39	79.3	8,145	25	11	7,421	68	7,381
1370	2/20/17	8,088	805	39	79.6	8,106	25	11	7,437	68	7,397
1384	2/20/17	8,092	805	40	79.2	8,105	25	10	7,530	68	7,490
1619	2/20/17	8,016	805	39	78.0	8,039	25	11	7,450	68	7,410
629	2/26/17	7,604	805	38	78.5	7,642	25	11	7,426	68	7,393
							25-A-2283	12			
							25-B-2359	10			
							25-C-2445	6			
									7,087	66	7,059

#—Transferred from GRCX #1516—account leaking.

FEB., 1917—Continued.

THEIR BILLING.				OUR RECEIPTS.							
Car number and Initial.	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Gravity.	Net Gallons.	Color.	Outage.	Gross Gallons.	Temp.	Net Gallons.
GRCX 1061 1369 615	2/26/17	8,180	805	38°	78.9	8,204	25	6"	7,914	66°	7,882
	2/28/17	8,092	805	40	77.6	8,105	25	11	7,449	70	7,399
	2/26/17	8,006	805	44	75.9	7,997	25-A-2457	11			
					75.7		25-B-2485	11			
					75.3		52-C-2429	11			
1054	2/26/17	8,094	805	44	77.9	8,085	25	1' 2	7,371	68	7,332
1143	2/26/17	8,371	805	44	79.1	8,352	25	11	7,184	68	7,146
1148	2/26/17	8,130	805	44	77.5	8,112	25	1 2	7,652	66	7,621
1228	2/26/17	8,089	805	42	77.6	8,091	25	11	7,139	68	7,101
1616	2/26/17	8,017	805	44	78.6	8,014	25	11	7,448	68	7,408
627	2/26/17	7,605	805	43	79.9	7,618	25-A-2437	10	7,497	66	7,467
					80.1		25-B-2457	6			
					79.9		25-C-2399	6			
1034	2/26/17	8,201	805	43	79.6	8,198	25	8	7,293	66	7,259
1039	2/26/17	8,157	805	43	80.3	8,154	25	1' 2	7,279	68	7,240
1052	2/26/17	8,085	805	43	79.5	8,082	25	8	7,752	66	7,721
328	2/26/17	7,062	805	36	79.5	7,084	25	1 2	7,176	68	7,138
1112	2/26/17	8,132	805	38	80.7	8,146	25	11	6,455	68	6,421
422	2/28/17	7,044	805	46	81.6	7,001	17	1 2	7,141	68	7,103
218	2/26/17	6,542	805	44	78.6	6,545	25	9	6,608	70	6,564
1064	2/26/17	8,144	805	44	79.3	8,136	25	1 2	5,714	68	5,684
1718	2/28/17	8,103	805	52	81.2	8,053	17	1 4	7,034	68	6,996
								11	7,466	70	7,416

956	2/28/17	8,059	805	47	80.7	8,035	25	11	7,420	70	7,371
428	2/28/17	8,175	805	40	81.5	8,136	25	10	7,611	70	7,560
229	2/28/17	6,477	805	44	77.9	6,480	25	12	5,820	70	5,781
222	2/28/17	6,530	805	30	80.5	6,594	18x	11	5,946	70	5,906
						<u>834,427</u>					<u>776,463</u>

104  
Our file.

Their billing.....	834,427
Our receipts.....	776,463
Difference.....	<u>57,964</u>

MAR.—1917.

Car number and Initial. All cars are GRCX cars.	THEIR BILLING.		OUR RECEIPTS.		Net Gallons.
	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp. Gravity. Color.	
449	3/2/17	7,060	805	32° 80.7	6,842
168	3/7/17	7,016	805	39 79.7	6,240
934	3/2/17	8,061	805	40 79.0	7,829
1066	3/2/17	8,158	805	39 79.4	7,565
1156	3/2/17	8,130	805	40 78.8	7,491
1500	3/2/17	12,029	805	38 79.0	11,474
620	3/2/17	8,018	805	40 78.6	
				19-A-2564	
				25-B-2604	
				20-C-2447	
621	3/4/17	8,005	805	42 79.8	7,585
				-A-2542	
				-B-2633	
				-C-2503	
1207	3/4/17	8,090	805	50 80.2	7,780
1331	3/4/17	8,092	805	49 79.9	7,931
1611	3/7/17	8,017	805	50 79.1	7,686
1613	3/7/17	8,017	805	48 79.5	7,763
2025	3/7/17	8,153	805	40 79.3	7,763
1271	3/2/17	8,095	805	46 79.1	7,703
900	3/7/17	8,055	805	34 80.3	7,861
					7,489

1211 #	3/14/17	8,143	805	32	80.0	8,198	25	7	7,762	68	7,721
1150	3/13/17	8,130	805	36	77.7	8,155	25	12	7,337	68	7,298
1220	3/7/17	8,096	805	34	79.8	8,140	25	10	7,537	62	7,527
1225	3/7/17	8,095	805	34	80.0	8,139	25	8	7,693	62	7,683
1337	3/7/17	8,095	805	36	80.0	8,128	25	6	7,832	62	7,822
1385	3/13/17	8,092	805	41	77.0	8,099	25	12	7,364	68	7,325
1035	3/7/17	8,239	805	34	78.0	8,284	25	3	8,143	68	8,100
1505	3/7/17	12,023	805	33	79.1	12,118	25	4	11,841	68	11,778
1021	3/13/17	8,148	805	33	76.5	8,199	25	12	7,415	68	7,375
911	3/7/17	8,055	805	32	78.8	8,111	25	5	7,854	68	7,812
913	3/7/17	8,056	805	32	79.0	8,112	25	2	8,004	68	7,961
916	3/7/17	8,059	805	32	79.8	8,115	25	5	7,858	68	7,816
1042	3/7/17	8,185	805	32	79.8	8,241	25	4	8,038	68	7,994
1065	3/7/17	8,131	805	30	78.5	8,197	25	4	7,985	68	7,942
1209	3/7/17	8,092	805	32	78.8	8,147	25	6	7,829	68	7,787
1610	3/7/17	8,017	805	30	79.6	8,088	25	4	7,883	68	7,841
1061	3/7/17	8,180	805	38	79.6	8,204	25	6	7,914	68	7,872
1155	3/7/17	8,130	805	37	79.5	8,160	25	4	7,971	68	7,928
1607	3/7/17	8,016	805	38	79.7	8,045	25	4	7,882	68	7,840
1006	3/13/17	8,128	805	39	78.4	8,146	25	12	7,396	68	7,357
1024	3/13/17	8,145	805	40	78.9	8,159	25	10	7,583	68	7,543
1082	3/13/17	8,144	805	40	77.8	8,157	25	12	7,411	68	7,371
1178	3/13/17	8,130	805	40	77.4	8,134	25	10	7,521	68	7,481
242	3/13/17	6,517	805	43	77.1	6,521	25	10	6,009	68	5,977
335	3/13/17	7,054	805	44	78.1	7,039	25	10	6,526	68	6,491

#---Transferred from GRCX #1030.



332	3/23/17	7,065	805	38	79.2	7,056	1' 3	6,114	72	6,065
1029	3/20/17	8,225	805	38	79.3	8,249	10	7,657	68	7,616
1064	3/20/17	8,144	805	38	78.8	8,167	1 2	7,229	72	7,171
428	3/17/17	8,175	805	50	78.1	8,084	10	7,611	72	7,550
1052	3/20/17	8,085	805	50	79.4	8,044	8	7,683	68	7,642
1237	3/21/17	8,099	805	48	78.0	8,069	10"	7,540	72	7,480
2012	3/21/17	8,147	805	48	78.3	8,132	10	7,537	72	7,477
1112	3/20/17	8,132	805	42	78.5	8,125	9	7,610	68	7,569
NOX8024#	3/23/17	8,130	805	40	78.7	8,134	1' 7	6,758	72	6,704
1272	3/20/17	8,093	805	41	78.5	8,105	10	7,539	68	7,499
2014	3/20/17	8,148	805	42	80.4	8,170	10	7,538	68	7,498
2016	3/20/17	8,153	805	40	76.9	8,181	10	7,542	68	7,502
251	3/20/17	6,510	805	46	78.3	6,503	11	5,928	68	5,896
1049	3/20/17	8,112	805	48	80.3	8,082	8	7,709	68	7,668
1111	3/23/17	8,137	805	47	80.0	8,103	11	7,438	72	7,378
2022	3/20/17	8,152	805	48	78.6	8,137	10	7,541	68	7,501
328	3/23/17	7,062	805	40	78.8	7,042	1 2	6,201	72	6,151
426	3/23/17	8,180	805	40	79.8	8,141	1 2	7,261	72	7,203
1036	3/23/17	8,220	805	40	80.2	8,233	1 3	7,199	72	7,141
1229	3/23/17	8,086	805	40	76.6	8,099	11 3/4	7,380	72	7,321
218	3/23/17	6,542	805	40	79.5	6,563	1 6	5,357	72	5,314
2015	3/23/17	8,151	805	40	80.5	8,179	1 1	7,258	72	7,200
2025	3/23/17	8,153	805	40	79.8	8,181	1 2	7,974	72	7,910
1027	3/23/17	8,179	805	42	78.9	8,181	1 2	7,260	72	7,202
1083	3/23/17	8,140	805	41	78.3	8,147	10	7,578	72	7,517

#—Transferred from GRCX 1144.



427	3/20/17	8,137	805	50	79.5	8,045	25	8	7,733	70	7,681
251	3/30/17	6,510	805	49	78.6	6,491	25	10	6,004	70	5,964
329	3/20/17	7,049	805	50	78.3	6,980	25	8	6,668	70	6,624
915	3/20/17	8,057	805	50	79.5	8,017	25	8	7,657	70	7,606
1150	3/30/17	8,130	805	49	78.9	8,086	25	8	7,691	70	7,640
1211	3/30/17	8,093	805	50	78.3	8,052	25	8	7,691	70	7,640
1239	3/30/17	8,099	805	50	78.7	8,058	25	10	7,540	70	7,490
1718	3/30/17	8,103	805	50	79.0	8,063	25	8	7,704	70	7,653
434	3/30/17	8,180	805	60	80.7	8,034	25	6	7,914	70	7,861
1369	3/30/17	8,092	805	60	80.1	7,998	25	6	7,829	70	7,777
1021	3/30/17	8,148	805	45	80.0	8,134	25	12	7,415	70	7,366
1624	3/30/17	8,014	805	46	79.4	8,001	25	10	7,494	70	7,444
											<hr/>
											839,514

All cars are GRCX  
cars except as noted.

Their billing. . . . .	900,350
Our receipts. . . . .	839,514
<hr/>	
Difference. . . . .	60,836



1370	4/8/17	8,088	805	58	80.1	8,005	x8		10	7,530	68	7,490
1378	4/8/17	8,093	805	52	78.1	8,042	25		10	7,535	68	7,495
622	4/4/17	8,015	805	54	78.9	7,954	25		10-A-2481			
					76.6		25		10-B-2522			
629	4/4/17	7,604	805	54	78.2		25		10-C-2459	7,462	70	7,412
					77.6	7,562	25-10-A-2358					
					79.0		25-8-B-2411					
					78.8		25-10-C-2347					
1074	4/4/17	8,091	805	54	78.4	8,029	25		8	7,116	70	7,069
1237	4/4/17	8,099	805	54	77.8	8,037	25		10	7,691	70	7,644
1619	4/4/17	8,016	805	53	79.4	7,966	25		8	7,540	70	7,490
2012	4/4/17	8,147	805	54	79.4	8,099	25		8	7,641	70	7,590
1462	4/4/17	8,093	805	50	78.0	8,052	25		10	7,707	70	7,656
924	4/4/17	8,059	805	54	78.5	7,998	25		6	7,535	70	7,485
934	4/4/17	8,061	805	54	79.2	7,999	25		7	7,797	70	7,745
1034	4/4/17	8,201	805	56	77.8	8,128	25		7	7,731	70	7,769
1080	4/4/17	8,185	805	56	78.1	8,112	25		6	7,866	70	7,814
1611	4/4/17	8,017	805	54	78.3	7,962	25		7	7,919	70	7,866
1113	4/8/17	8,139	805	56	79.0	8,057	25		5	7,709	70	7,658
2020	4/4/17	8,149	805	56	79.1	8,091	25		7	7,919	68	7,877
168	4/8/17	7,016	805	52	73.0	6,911	25		7	7,788	70	7,736
1148	4/8/17	8,130	805	52	71.8	8,041	25		5	6,702	68	6,666
1206	4/8/17	8,089	805	53	71.8	8,064	25		6	7,910	68	7,868
1271	4/8/17	8,095	805	48	73.1	8,065	25		4	7,826	68	7,784
1384	4/8/17	8,092	805	48	73.2	8,062	25		5	7,950	68	7,908
434	4/8/17	8,180	805	46	74.7	8,109	25		8	7,891	68	7,849
1229	4/8/17	8,086	805	48	75.1	8,056	25		9	7,678	68	7,637
										7,602	68	7,561

APR., 1917—Continued.

## THEIR BILLING.

Into

Car number and Initials.	Date Unloaded.	Gross Gallons.	No.	Temp.	Gravity.	Gallons.	Color.	Outage.	Gross Gallons	Temp.	Net Gallons.
All car int.											
GRCX											
1368	4/8/17	8,093	805	46°	79.5	8,074	25	8"	7,691	68°	7,650
408	4/12/17	8,136	805	48	78.0	8,054	25	10	7,575	68	7,535
1156	4/12/17	8,130	805	48	77.6	8,091	25	10	7,521	68	7,481
1621	4/13/17	8,016	805	48	79.0	7,992	25	6	7,772	68	7,731
445	4/13/17	8,140	805	55	76.9	8,021	25	6	7,075	68	7,037
1143	4/13/17	8,371	805	54	78.0	8,271	25	5	8,145	68	8,102
236	4/12/17	6,509	805	50	78.0	6,486	25	5	6,326	68	6,292
410	4/12/17	8,153	805	50	76.0	8,087	25	12	7,419	66	7,389
911	4/12/17	8,055	805	50	75.1	8,015	25	8	7,655	68	7,614
1015	4/12/17	8,183	805	52	78.1	8,131	25	8	7,776	68	7,735
1049	4/12/17	8,112	805	50	75.6	8,071	25	7	7,780	68	7,739
1112	4/12/17	8,132	805	52	76.8	8,072	25	10	7,523	68	7,483
1272	4/12/17	8,098	805	50	78.0	8,057	25	7	7,767	68	7,726
1319	4/12/17	8,096	805	50	76.3	8,055	25	6	7,833	68	7,791
2028	4/12/17	8,153	805	52	74.5	8,116	25	7	7,792	68	7,750
1228	4/12/17	8,089	805	46	76.6	8,070	25	8	7,687	68	7,646
1613	4/12/17	8,017	805	46	77.1	8,004	25	9	7,571	66	7,541
2019	4/12/17	8,147	805	46	76.6	8,143	25	7	7,786	68	7,744
1952	4/17/17	8,009	805	52	78.0	7,949	25	6	7,747	70	7,695

1953	4/17/17	8,010	805	52	76.9	7,950	25	8	7,609	70	7,558
1954	4/17/17	8,007	805	54	76.0	7,937	25	10	7,450	70	7,400
159	4/13/17	8,052	805	52	76.8	7,956	25	6	7,799	68	7,757
449	4/19/17	7,060	805	52	75.7	6,985	25	11	6,454	74	6,394
1033	4/13/17	8,173	805	53	78.1	8,116	25	4	8,027	68	7,984
1111	4/13/17	8,137	805	52	77.9	8,077	25	3	8,034	68	7,991
1132	4/13/17	8,140	805	53	77.9	8,074	25	4	7,981	68	7,938
1277	4/13/17	8,093	805	52	77.9	8,042	25	5	7,891	68	7,849
1616	4/13/17	8,017	805	52	78.4	7,972	25	5	7,830	68	7,788
1949	4/17/17	8,005	805	49	75.0	7,961	25	10	7,449	70	7,393
1950	4/17/17	8,013	805	50	74.6	7,964	25	8	7,612	70	7,561
1951	4/17/17	8,011	805	50	75.7	7,962	25	10	7,454	70	7,404
368	4/17/17	7,076	805	50	76.3	7,011	25	8	6,694	70	6,649
924	4/17/17	8,059	805	52	75.9	8,003	25	11	7,420	70	7,371
1034	4/17/17	8,201	805	52	75.9	8,149	25	8	7,793	70	7,741
1065	4/19/17	8,131	805	49	74.1	8,096	25	11	7,486	74	7,415
1080	4/17/17	8,185	805	52	74.0	8,133	25	10	7,620	70	7,569
1247	4/17/17	8,093	805	50	74.6	8,052	25	7	7,762	70	7,710
1602	4/17/17	8,023	805	48	77.0	7,999	25	10	7,503	70	7,453
1611	4/17/17	8,017	805	46	76.4	8,004	25	6	7,773	70	7,721
1006	4/17/17	8,128	805	50	74.4	8,087	25	8	7,724	70	7,673
2029	4/19/17	8,152	805	50	75.3	8,099	25	10	7,541	74	7,471
328	4/19/17	7,062	805	50	74.7	7,019	25	12	6,373	74	6,313
335	4/19/17	7,054	805	50	74.6	7,011	25	11	6,448	74	6,388
2006	4/19/17	8,146	805	49	75.0	8,102	25	10	7,536	74	7,466
1945	4/18/17	8,014	805	48	74.5	7,975	25	10	7,461	72	7,401
1947	4/18/17	8,013	805	48	74.6	7,974	25	8	7,612	72	7,551

APR., 1917—Continued.

## THEIR BILLING.

Car number and Initials.	Date Unloaded.	Into Tank		Temp.	Gravity.	Gallons.	Color.	Outage.	OUR RECEIPTS.		Temp.	Net Gallons.
		Gross	Gallons.						Gross Gallons	Net Gallons.		
All car Int.												
GRCX.												
1948	4/18/17	8,006	805	48°	74.5	7,967	25	10"	7,450	7,390	72°	7,390
1220	4/18/17	8,096	805	44	74.5	8,087	25	7	7,765	7,703	72	7,703
1502	4/23/17	12,029	805	46	75.1	12,021	25	11	11,212	11,107	74	11,107
985	4/19/17	8,055	805	46	75.6	8,037	25	10	7,499	7,429	74	7,429
1251	4/19/17	8,096	805	46	74.7	8,077	25	11	7,454	7,384	74	7,384
1178	4/27/17	8,130	805	46	79.3	8,102	18	10	7,521	7,461	72	7,461
1209	4/28/17	8,092	805	46	78.8	8,073	25	10	7,534	7,454	76	7,454
1205	4/26/17	8,082	805	46	75.0	8,063	25	10	7,524	7,444	76	7,444
1946	4/18/17	8,011	805	48	74.5	7,972	25	8	7,610	7,549	72	7,549
1955	4/18/17	8,011	805	52	75.6	7,956		5	7,810	7,749	72	7,749
1956	4/18/17	8,009	805	52	75.5	7,949	25	7	7,679	7,618	72	7,618
1957	4/18/17	8,007	805	50	75.7	7,958	25	6	7,745	7,685	72	7,685
1958	4/18/17	8,007	805	52	75.6	7,947	25	7	7,677	7,616	72	7,616
1959	4/18/17	8,005	805	52	75.2	7,945	25	7	7,675	7,614	72	7,614
1960	4/18/17	8,008	805	53	75.2	7,943	25	7	7,678	7,617	72	7,617
1965	4/18/17	8,013	805	51	76.0	7,958	25	8	7,612	7,551	72	7,551
1387	4/18/17	8,095	805	52	74.9	8,044	25	10	7,536	7,476	72	7,476
305	4/23/17	6,364	805	56	75.2	6,300	25	11	7,795	7,741	74	7,741

1066#	4/28/17	8,153	805	54	74.3	8,039	25	10	7,567	74	7,496
1066	4/23/17	8,158	805	56	74.5	8,085	25	11	7,511	74	7,441
1207	4/23/17	8,090	805	54	75.6	8,028	25	10	7,532	74	7,462
2010	4/23/17	8,150	805	54	75.4	8,078	25	12	7,355	74	7,286
2013	4/23/17	8,147	805	56	75.3	8,065	25	12	7,353	74	7,284
437	4/23/17	8,137	805	50	74.0	8,044		11	7,491	74	7,421
1026	4/27/17	8,173	805	51	75.2	8,127	25	8	7,767	72	7,705
1271	4/23/17	8,095	805	50	74.9	8,054	25	10	7,536	74	7,466
1384	4/23/17	8,092	805	50	75.2	8,051	25	11	7,450	74	7,380
1609	4/23/19	8,023	805	50	74.1	7,989	24	10	7,503	74	7,433
1624	4/23/17	8,014	805	50	74.8	7,980	25	11	7,418	74	7,349
2016	4/23/17	8,153	805	48	74.5	8,113	25	10	7,542	74	7,442
1355	4/24/17	8,090	805	56	75.6	8,017	25	10	7,532	76	7,452
1963	4/24/17	8,009	805	62	78.3	7,892	21	9	7,529	76	7,449
1964	4/24/17	8,009	805	60	78.2	7,907	21	11	7,369	76	7,290
1083	4/23/17	8,140	805	60	75.0	8,046	25	10	7,578	74	7,507
1237	4/23/17	8,099	805	60	75.5	8,005	25	12	7,370	74	7,301
1961	4/27/17	8,008	805	60	77.8	7,906	17	8	7,607	72	7,546
1962	4/27/17	8,011	805	61	77.7	7,904	19	8	7,610	72	7,549
1011	4/27/17	5,170	805	60	74.9	8,075	25	5	7,967	72	7,903
1462	4/27/17	8,093	805	60	74.5	7,999	25	7	7,762	74	7,692
1010	4/27/17	8,195	805	60	74.7	8,059	25	7	7,791	72	7,729
2022	4/27/17	8,152	805	58	74.4	8,059	25	7	7,791	72	7,729
1023	4/28/17	8,175	805	62	74.4	8,069	25	8	7,769	76	7,686
1142	4/27/17	8,387	805	58	74.6	8,291	25	7	8,015	72	7,951

#—Transferred from GRCX #427



Their billing. . . . .	1,164,303
Our receipts, . . . . .	1,098,604
Difference. . . . .	<hr/> 65,699

MAY—1917.

THEIR BILLING.				OUR RECEIPTS.			
Car number and Initials.	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Gravity.	Net Gallons.	
							Color.
							Outage. Gallons.
							Temp.
							Net Gallons.
GRCX 1951	5/16/17	8,011	805	55°	76.1	7,958	25
900	5/17/17	8,055	805	62	74.0	7,954	25
1384	5/21/17	8,092	805	62	75.4	7,990	25
1945	5/16/17	8,014	805	60	76.2	7,935	25
1946	5/16/17	8,011	805	64	73.2	7,917	25
1948	5/16/17	8,006	805	62	75.7	7,920	25
1865	5/16/17	8,013	805	64	73.8	7,379	25
1227	5/17/17	8,088	805	56	76.1	8,057	25
1973	5/17/17	8,009	805	52	76.5	7,973	25
1976	5/17/17	8,000	805	52	76.2	7,970	25
445#	5/25/17	8,173	805	60	74.9	8,132	25
335	5/21/17	7,054	805	52	75.1	6,979	25
434	5/21/17	8,180	805	54	74.8	8,066	25
1387	5/21/17	8,095	805	54	75.2	8,033	25
1609	5/21/17	8,023	805	52	74.9	7,978	25
1947	5/21/17	8,013	805	54	74.9	7,966	25
1956	5/21/17	8,009	805	52	75.9	7,973	25
1938	5/21/17	8,007	805	54	74.4	7,961	25
1385	5/21/17	8,092	805	54	74.4	8,030	25
1975	5/25/17	8,008	805	58	75.4	7,941	25
2014	5/25/17	8,148	805	58	75.8	8,079	25

1174	5/25/17	8,130	805	58	74.6	8,038	25	1	3	7,120	74	7,054
1038	5/21/17	8,151	805	54	75.2	8,088	25		10	7,589	76	7,509
332	5/21/17	7,065	805	52	74.6	7,012	25		12	6,376	76	6,308
408	5/21/17	8,136	805	52	75.2	8,060	25		10	7,575	76	7,494
960	5/21/17	8,061	805	52	75.9	8,010	25		10	7,505	76	7,425
1229	5/23/17	8,086	805	54	75.7	8,024	25		10	7,528	74	7,458
1602	5/21/17	8,023	805	52	75.0	7,978	25		12	7,346	76	7,268
368	5/29/17	7,076	857	62	70.6	7,019	25	1	2	6,213	78	6,138
1015	5/29/17	8,183	857	74	72.2	8,131	25	1	2	7,263	78	7,176
1068	5/29/17	8,137	857	62	70.7	8,093	25	1	1	7,315	78	7,227
1080	5/29/17	8,185	857	62	74.3	8,141	25	1	3	7,168	78	7,082
1278	5/29/17	8,092	805	62	74.5	8,048	25	1	3	7,087	78	7,002
1225	5/25/17	8,095	805	58	76.2	8,012	25		11	7,453	74	7,384
1859	5/29/17	8,172	857	58	73.3	8,103	25	1	2	7,176	78	7,090
1971	5/25/17	8,006	805	57	73.8	7,944	25		10	7,406	74	7,337
1977	5/25/17	8,009	805	58	75.8	7,942	25		10	7,409	74	7,340
1955	5/23/17	8,011	805	62	76.9	7,921	25		6	7,727	74	7,655
1957	5/23/17	8,007	805	58	76.6	7,940	25		6	7,723	74	7,651
1961	5/23/17	8,008	805	56	75.6	7,951	25		6	7,725	74	7,653
1963	5/23/17	8,005	805	58	74.2	7,938	23		5	7,789	74	7,717
1966	5/23/17	8,006	805	56	75.7	7,948	25		7	7,651	74	7,580
1969	5/23/17	8,009	805	56	75.7	8,023	25		6	7,725	74	3,836
392	5/25/17	7,055	805	61	75.9	6,981	25	3'	0	3,873	74	3,836
924	5/25/17	8,059	805	61	75.7	8,002	25		10	7,503	74	7,433
1962	5/25/17	8,011	805	61	75.8	7,971	25		11	7,323	74	7,255

#—GRCX 445 transferred from GRCX 1033.



900	5/3/17	8,055	805	58	75.8	7,973	25	1'	1	7,241	76	7,164
1061	5/3/17	8,180	805	54	75.7	8,117	25	1	1	7,354	76	7,276
1132	5/3/17	8,140	805	53	75.2	8,098			8	7,700	76	7,618
1946	5/3/17	8,011	805	52	74.9	7,975	25	1	0	7,224	76	7,147
1948	5/3/17	8,006	805	52	75.2	7,970	25		10	7,402	76	7,323
1960	5/3/17	8,008	805	50	75.7	7,988	25		11	7,315	76	7,237
1965	5/3/17	8,013	805	52	74.9	7,977	25		10	7,409	76	7,330
426	5/3/17	8,180	805	54	75.1	8,066	25		10	7,616	76	7,535
960	5/3/17	8,061	805	58	75.5	7,980	25		11	7,422	76	7,343
1113	5/3/17	8,139	805	56	75.6	8,058	25		12	7,345	76	7,267
1945	5/3/17	8,014	805	56	75.3	7,957	25		8	7,578	76	7,497
328	5/3/17	7,062	805	48	77.3	7,028	25		9	6,609	70	6,565
1327	5/3/17	8,096	805	46	77.3	8,077	25		6	7,833	70	7,781
434	5/3/17	8,180	805	46	80.0	8,109	20		10	7,616	70	7,565
1229	5/3/17	8,086	805	56	80.2	8,013	19		4	7,941	70	7,887
335	5/3/17	7,054	805	48	76.4	6,997	25		10	6,526	70	6,482
449	5/3/17	7,060	805	49	77.4	6,998	25		8	6,679	70	6,635
985	5/3/17	8,055	805	48	77.3	8,026	25		5	7,854	70	7,801
1153	5/3/17	8,130	805	54	78.2	8,033	25		6	7,842	70	7,790
1609	5/3/17	8,023	805	48	77.8	7,999	25		9	7,577	70	7,275
1956	5/3/17	8,009	805	52	77.4	7,973	25		5	7,791	70	7,739
1969	5/9/17	8,009	805	52	77.6	7,973	25		8	7,574	70	7,523
1270	5/9/17	8,088	805	54	73.2	8,026	25		10	7,530	70	7,480
1611	5/9/17	8,017	805	54	73.1	7,961	25		9	7,571	70	7,520
1616	5/9/17	8,017	805	54	73.8	7,961	25		8	7,642	70	7,591
1321	5/10/17	8,089	805	52	78.9	8,038	25		8	7,687	68	7,646
1144	5/9/17	8,130	805	61	73.7	8,023	25		10	7,521	70	7,471



1954	5/16/17	8,007	805	55	74.7	7,955	25	11	7,314	74	7,246
422	5/13/17	7,004	805	48	77.0	6,992	25	10	6,535	72	6,483
428	5/13/17	8,175	805	50	75.3	8,082	25	10	7,611	72	7,550
1178	5/13/17	8,130	805	50	76.7	8,080	25	11	7,432	72	7,373
620	5/13/17	8,018	805	50	76.0	7,978-A-2518	25	8			
					76.6	B-2603	25	8			
					76.2	C-2431	25	10	7,553	72	7,493
1083	5/13/17	8,140	805	51	77.2	8,094	25	10	7,578	72	7,518
1237	5/13/17	8,099	805	48	76.9	8,037	25	10	7,696	72	7,634
1368	5/13/17	8,093	805	48	77.6	8,063	25	8	7,691	72	7,629
956	5/11/17	8,059	805	46	77.0	8,041		8	7,658	68	7,617
1006	5/11/17	8,128	805	50	77.2	8,087		8	7,724	68	7,683
1148	5/11/17	8,130	805	52	76.7	8,070		6	7,842	68	7,801
1209	5/11/17	8,092	805	42	77.0	8,094		6	7,829	68	7,787
1247	5/16/17	8,093	805	44	75.8	8,084	25	10	7,535	74	7,465
1331	5/11/17	8,092	805	50	77.1	8,051		8	7,690	68	7,649
1366	5/11/17	8,093	805	51	76.9	8,047		8	7,691	68	7,650
2022	5/11/17	8,152	805	48	77.0	8,137		10	7,541	68	7,501
2024	5/11/17	8,148	805	48	76.7	8,133		10	7,538	68	7,498
1950	5/16/17	8,013	805	56	75.6	7,955	25	11	7,320	74	7,252
1113	5/31/17	8,139	805	64	74.5	8,061	25	11	7,440	78	7,351
1270	5/31/17	8,088	805	60	74.4	8,055	25	12	7,360	78	7,272
1327	5/31/17	8,096	805	58	75.2	8,074	25	11	7,454	78	7,365
2029	5/31/17	8,152	805	62	74.9	8,105	25	11	7,452	78	7,363

MAY, 1917—Continued.

THEIR BILLING				OUR RECEIPTS.				
Car number and Initials.	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp. Gravity.	Net Gallons.	Color.	Gross Outage. Gallons. Temp.	Net Gallons.
1132#		8,140		62°	8,052			
1355#		8,090		60	8,048			
1960#		8,008		60	7,972			
5/31/17	PR car 808#		805				2' 4" 5,677 78°	5,609
5/31/17	PR car 843#		805				3' 10" 3,457 78	3,416
								<u>1,016,789</u>
					<u>1,112,507</u>			

#—Pr cars 808 and 843 transferred from GRCX #1132, 1355 and 1960.

Their billing.....	1,112,507
Our receipts.....	1,016,789
Difference.....	<u>95,718</u>

# UNREFINED NAPHTHA FROM GYPSY OIL COMPANY—JUNE, 1917.

UNITED STATES OF AMERICA.

1345

Car Number and Initials.	THEIR BILLING.			OUR RECEIPTS.							Net Gallons.
	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Color.	Net Gallons.	Gravity.	Outage.	Gross Gallons.	Temp.	
GRGX 1611	6/4/17	8,017	805	74°	18	7,943	70.7	6"	7,772	76°	7,689
1064	6/5/17	8,144	805	64	25	8,089	75.1	8	7,739	78	7,646
1366	6/9/17	8,093	805	63	25	8,044	71.4	8	7,691	80	7,589
1955	6/9/17	8,011	805	65	25	7,984	73.5	9	7,497	80	7,397
1957	6/9/17	8,007	805	62	25	7,996	73.5	10	7,407	80	7,308
1037	6/4/17	8,191	805	56	25	8,179	74.7	10	7,626	76	7,544
1850	6/4/17	8,175	805	56	25	8,197	74.7	8	7,734	76	7,651
1851	6/4/17	8,173	805	56	25	8,195	74.5	6	7,884	76	7,800
1983	6/4/17	8,006	805	56	25	8,027	74.0	8	7,574	76	7,493
1205	6/5/17	8,082	805	56	25	8,051	72.9	10	7,524	78	7,434
1245	6/5/17	8,096	805	56	25	8,065	72.0	11	7,454	78	7,365
1247	6/5/17	8,093	805	56	25	8,062	72.3	10	7,535	78	7,445
1271	6/5/17	8,095	805	56	25	8,064	73.6	8	7,693	78	7,601
1852	6/4/17	8,170	805	60	25	8,170	75.1	6	7,881	76	7,797
1853	6/4/17	8,172	805	60	25	8,172	74.0	6	7,883	76	7,799
1854	6/4/17	8,176	805	59	25	8,181	74.7	7	7,814	76	7,730
1858	6/4/17	8,173	805	59	25	8,178	74.7	8	7,732	76	7,649
1956	6/5/17	8,009	805	60	25	8,009	75.9	8	7,577	78	7,486
1961	6/5/17	8,008	805	62	25	7,997	74.9	6	7,725	78	7,632
1963	6/5/17	8,005	805	60	25	8,005	75.3	8	7,573	78	7,482
1969	6/5/17	8,009	805	62	25	7,998	72.6	8	7,577	78	7,486

## UNDEFINED NAPHTHA FROM GYPSY OIL COMPANY—JUNE, 1917.—Continued.

Car Number and Initials.	THEIR BILLING.			OUR RECEIPTS.							
	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Color.	Net Gallons.	Gravity.	Outage	Gross Gallons.	Temp.	Net Gallons.
GRCX 1351	6/4/17	8,093	805	60°	25	8,060	75.3	8"	7,691	76°	7,609
1727	6/4/17	8,101	805	58	25	8,079	75.6	6	7,840	76	7,756
1856	6/4/17	8,178	805	59	25	8,183	74.0	6	7,888	76	7,804
1011	6/6/17	8,170	805	69	17	8,089	74.9	Full	8,170	78	8,072
2016	6/6/17	8,153	805	68	18	8,077	71.5	Full	8,153	78	8,055
1855	6/9/17	8,179	805	60	25	8,179	73.3	10	7,566	80	7,465
900	6/6/17	8,055	805	68	17	7,980	72.8	1	8,036	78	7,940
1768	6/5/17	8,096	805	64	25	8,041	75.1	11	7,460	78	7,370
1799	6/5/17	8,101	805	64	25	8,046	75.7	10	7,548	78	7,457
1857	6/5/17	8,180	805	64	25	8,158	74.7	11	7,477	78	7,387
1974	6/5/17	8,007	805	64	25	7,986	74.3	8	7,575	78	7,484
1227	6/6/17	8,088	805	62	25	8,044	75.3	9	7,610	78	7,519
1962	6/6/17	8,011	805	61	25	8,006	75.4	7	7,656	78	7,564
1964	6/6/17	8,009	805	62	25	7,998	75.0	8	7,577	78	7,486
1967	6/6/17	8,009	805	62	25	7,998	75.1	8	7,577	78	7,486
1971	6/6/17	8,006	805	61	25	8,001	75.4	10	7,406	78	7,317
1973	6/6/17	8,007	805	61	25	8,002	75.2	8	7,575	78	7,484
1975	6/6/17	8,008	805	60	25	8,008	75.2	8	7,576	78	7,485
1976	6/6/17	8,006	805	60	25	8,006	75.3	10	7,406	78	7,317
1977	6/6/17	8,007	805	60	25	8,007	75.4	10	7,409	78	7,320
1740	6/7/17	8,097	805	56	25	8,067	72.7	11	7,461	78	7,371
1780	6/9/17	8,098	805	56	25	8,068	72.9	10	7,545	80	7,445

1786	6 7/17	8,100	805	56	25	8,070	72.1	10	7,547	78	7,456
428	6/7/17	8,175	805	52	25	8,123	73.9	1	7,256	78	7,169
1083	6/7/17	8,140	805	54	25	8,120	74.6	11	7,494	78	7,404
159	6/11/17	8,052	805	72	17	7,941	70.7	8	7,666	84	7,543
1333	6/9/17	8,085	805	60	25	8,052	75.0	8	7,683	80	7,581
1946	6/14/17	8,011	805	61	25	8,006	73.9	8	7,578	80	7,477
1948	6/7/17	8,006	805	62	25	7,996	73.9	9	7,492	78	7,402
1953	6/7/17	8,010	805	59	25	8,015	74.6	8	7,577	78	7,486
1954	6/7/17	8,007	805	61	25	8,002	74.7	10	7,407	78	7,318
1965	6/7/17	8,013	805	61	25	8,008	73.0	9	7,499	78	7,409
1968	6/7/17	8,011	805	60	25	8,011	72.0	10	7,411	78	7,322
1978	6/7/17	8,014	805	60	25	8,014	75.1	8	7,581	78	7,490
1979	6/7/17	8,015	805	62	25	8,004	73.8	10	7,415	78	7,326
1982	6/7/17	8,011	805	62	25	8,000	72.9	8	7,578	78	7,487
2025	6/7/17	8,153	805	60	25	8,117	72.8	11	7,453	78	7,364
150	6/9/17	8,000	805	61	25	7,962	75.3	11	7,366	80	7,268
1232	6/11/17	8,095	805	62	25	8,051	72.8	11	7,453	84	7,334
1732	6/9/17	8,103	805	61	25	8,065	74.3	10	7,550	80	7,450
1774	6/9/17	8,100	805	63	25	8,051	75.2	8	7,701	80	7,599
1788	6/9/17	8,098	805	60	25	8,065	73.5	10	7,545	80	7,445
960	6/11/17	8,061	805	60	25	8,028	74.3	12	7,336	84	7,219
1251	6/11/17	8,096	805	58	25	8,074	74.8	10	7,537	84	7,416
1966	6/11/17	8,006	805	58	25	8,017	73.4	11	7,318	84	7,201
2014	6/11/17	8,148	805	62	25	8,101	74.0	10	7,538	84	7,417
1026	6/11/17	8,173	805	67	25	8,101	74.1	10	7,609	84	7,487

## UNDEFINED NAPHTHA FROM GYPSY OIL COMPANY—JUNE, 1917.—Continued.

## THEIR BILLING.

## OUR RECEIPTS.

Car Number and Initials.	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Color.	Net Gallons.	Gravity.	Outage.	Gross Gallons.	Temp.	Net Gallons.
GRCX 1034	6/11/17	8,201	805	64°	25	8,145	74.0	11"	7,551	84°	7,430
1377	6/11/17	8,095	805	64	25	8,040	74.2	10	7,536	84	7,415
1378	6/11/17	8,093	805	59	25	8,065	74.7	10	7,535	84	7,414
1859	6/11/17	8,172	805	60	25	8,172	73.3	8	7,731	84	7,607
2022	6/11/17	8,152	805	63	25	8,100	73.6	10	7,541	84	7,420
1706	6/14/17	8,098	805	66	25	8,033	74.9	10	7,545	80	7,445
1743	6/14/17	8,097	805	66		8,032	74.4	8	7,698	80	7,596
1984	6/14/17	8,009	805	66		7,977	74.7	8	7,577	80	7,476
1270	6/16/17	8,088	805	62	25	8,044	75.0	10	7,530	88	7,390
1775	6/11/17	8,107	805	63	25	8,058	75.0	8	7,707	88	7,564
1959	6/16/17	8,005	805	66	25	7,973	75.5	4	7,849	88	7,703
1981	6/16/17	6,008	805	64	25	7,987	77.3	7	7,653	88	7,511
1945	6/16/17	8,014	805	63	25	7,998		6	7,730	88	7,586
985	6/11/17	8,055	805	63	25	8,006	74.4	9	7,579	84	7,458
1209	6/14/17	8,092	805	60	25	8,059	74.4	8	7,690	80	7,588
2029	6/16/17	8,153	805	60	25	8,117	74.8	10	7,541	88	7,401
1400	6/14/17	8,093	805	58	25	8,071	75.0	8	7,691	80	7,589
1437	6/14/17	8,093	805	62		8,049	75.7	7	7,762	80	7,659
1040	6/14/17	8,209	805	64	25	8,153	75.9	8	7,801	80	7,697
1268	6/14/17	8,095	805	64	25	8,040	76.8	8	7,693	80	7,591
1276	6/14/17	8,095	805	64	25	8,040	76.4	8	7,693	80	7,591
1865	6/14/17	8,175	805	64		8,153	75.8	7	7,813	80	7,709

1865	6/14/17	8,174	805	64	25	8,152	76.3	10	7,562	80	7,461
1871	6/16/17	8,172	805	64	25	8,150	75.8	6	7,883	88	7,736
2010	6/14/17	8,150	805	63	25	8,098	76.0	10	7,540	80	7,446
1206	6/31/17	8,089	805	63	25	8,040	74.7	8	7,687	84	7,564
1201	6/18/17	8,082	805	64	25	8,028	74.1	8	7,680	80	7,526
1225	6/18/17	8,095	805	64	25	8,040	74.0	8	7,693	90	7,539
1624	6/18/17	8,014	805	64	25	7,961	73.8	8	7,639	90	7,486
1727	6/18/17	8,101	805	63	25	8,052	73.4	9	7,626	90	7,473
1852	6/18/17	8,170	805	64	25	8,148	73.5	10	7,558	90	7,407
1854	6/18/17	8,176	805	64	25	8,154	75.4	8	7,734	90	7,579
1856	6/18/17	8,178	805	63	24	8,162	73.5	8	7,736	90	7,581
1858	6/18/17	8,173	805	63	25	8,157	73.5	8	7,732	90	7,577
1950	6/18/17	8,013	805	64	25	7,992	74.2	10	7,413	90	7,265
1951	6/18/17	8,011	805	64	25	7,990	73.9	8	7,578	90	7,426
1850	6/18/17	8,175	805	60	25	8,175	76.3	8	7,734	90	7,579
1853	6/18/17	8,172	805	60	25	8,172	77.5	10	7,560	90	7,409
309	6/19/17	6,662	805	62	25	6,607	74.3	10	6,163	86	6,056
1153	6/21/17	8,130	805	62	25	8,003	74.4	11	7,432	84	7,313
1851	6/18/17	8,173	805	64	25	8,151	73.3	9	7,648	90	7,495
1860		8,175		65	25	8,148	75.5	8	7,734	84	7,610
1861	6/16/17	8,170	805	63	25	8,154	74.9	6	7,881	88	7,734
1862	6/20/17	8,173	805	66	25	8,140	74.3	7	7,811	84	7,686
1864	6/16/17	8,173	805	65	25	8,146	75.6	5	7,952	88	7,804
1869	6/16/17	8,170	805	65	25	8,143	75.5	6	7,881	88	7,734
1870	6/16/17	8,171	805	64	25	8,149	75.3	5	7,950	88	7,802
1349	6/19/17	8,090	805	56	25	8,059	70.7	10	7,532	86	7,402



1351	6/21/17	8,093	805	52	25	8,084	76.0	8	7,691	84	7,568
1983	6/21/17	8,006	805	52	25	8,038	75.1	10	7,406	84	7,288
328	6/21/17	7,062	805	54	25	7,021	75.1	11	6,455	84	6,352
1068	6/21/17	8,137	805	56	25	8,107	75.5	6	7,873	84	7,747
1740	6/21/17	8,097	805	56	25	8,067	76.0	8	7,698	84	7,575
1786	6/21/17	8,100	805	53	25	8,086	75.5	8	7,701	84	7,578
368	6/21/17	7,076	805	62	25	7,018	71.5	8	6,694	84	6,587
1174	6/21/17	8,130	805	64	25	8,053	71.5	10	7,521	84	7,401
1952	6/26/17	8,009	805	64	25	7,953	71.0	8	7,577	88	7,436
1732	6/23/17	8,103	805	60	25	8,052	75.4	8	7,704	84	7,581
1963	6/23/17	8,005	805	60	25	8,005	75.1	8	7,573	84	7,452
2016	6/23/17	8,153	805	59	25	8,102	75.3	10	7,542	84	7,421
1969	6/26/17	8,009	805	74	18	7,935	70.3	8	7,577	88	7,436
1978	6/26/17	8,014	805	74	18	7,940	70.8	8	7,581	88	7,440
1855	6/23/17	8,179	805	54	25	8,212	73.7	8	7,737	84	7,613
1955	6/23/17	8,011	805	56	25	8,032	74.4	8	7,578	84	7,457
1957	6/23/17	8,007	805	54	25	8,039	75.4	10	7,407	84	7,288
2006	6/23/17	8,146	805	60	25	8,090	74.1	8	7,706	84	7,583
1029	6/23/17	8,225	805	54	25	8,224	75.6	10	7,657	84	7,534
1113	6/23/17	8,139	805	56	25	8,105	74.6	8	7,699	84	7,576
1609	6/23/17	8,023	805	58	25	8,003	74.9	10	7,502	84	7,382
1948	6/26/17	8,006	805	72	18	7,943	70.3	8	7,574	88	7,433
1953	6/23/17	8,010	805	79	19	7,910	70.7	8	7,577	84	7,456
1954	6/23/17	8,007	805	76	19	7,922	71.1	8	7,575	84	7,454
428	6/26/17	8,175	805	58	25	8,091	70.2	10	7,611	88	7,469
2024	6/26/17	8,148	805	60	25	8,092	71.2	10	7,538	88	7,398
2025	6/27/17	8,153	805	59	25	8,102	72.1	8	7,713	86	7,580

## UNDEFINED NAPHTHA FROM GYPSY OIL COMPANY—JUNE, 1917.—Continued.

Car Number and Initials.	THEIR BILLING.			OUR RECEIPTS.							
	Date Unloaded.	Gross Gallons.	Into Tank No.	Temp.	Color.	Net Gallons.	Gravity.	Outage.	Gross Gallons.	Temp.	Net Gallons.
1083	6/26/17	8,140	805	70°	25	8,054	69.7	8"	7,735	88°	7,591
1968	9/26/17	8,011	805	72	17	7,948	70.7	8	7,578	88	7,437
1232	6/27/17	8,095	805	62	25	8,051	77.5	8	7,693	86	7,560
1974	6/27/17	8,007	805	66	25	7,975	77.5	8	7,575	86	7,444
1227	6/26/17	8,088	805	68	25	8,012	70.9	7	7,757	88	7,613
1271	6/26/17	8,095	805	70	25	8,008	70.2	10	7,536	88	7,396
1278	6/26/17	8,092	805	70	25	8,005	70.3	10	7,534	88	7,394
1327	6/26/17	8,096	805	70	25	8,009	70.9	8	7,694	88	7,551
426	6/27/17	8,180	805	60	25	8,107	75.5	8	7,773	86	7,639
1116	6/27/17	8,090	805	60	25	8,034	75.6	7	7,732	86	7,598
1774	6/27/17	8,100	805	60	25	8,067	75.2	6	7,839	86	7,703
335	6/26/17	7,654	805	74		6,958		11	6,448	88	6,328
1034	6/26/17	8,172	805	74	25	8,125	70.6	8	7,793	88	7,648
1859	6/27/17	8,172	805	70	25	8,082	71.4	10	7,560	86	7,429
1966	6/27/17	8,006	805	70	25	7,918	69.9	8	7,674	88	7,433
2022	6/27/17	8,152	805	70	25	8,062	72.0	8	7,712	86	7,579
1377	6/27/17	8,095	805	64	25	8,040	75.5	8	7,693	86	7,560
1616	6/27/17	8,017	805	64	25	7,965	76.2	8	7,642	86	7,510
1738	6/30/17	8,105	805	64	25	8,048	73.1	8	7,704	88	7,563
1747	6/30/17	8,103	805	63	25	8,054	73.7	8	7,704	88	7,561
1731	6/30/17	8,101	805	65	25	8,041	73.1	7	7,773	88	7,628
1251	6/30/17	8,096	805	81	18	7,984	70.3	7	7,765	88	7,621

2014	6/30/17	8,148	805	79	16	8,046	70.3	10	7,538	88	7,398
960	6/30/17	8,061	805	81	18	7,931	69.9	8	7,660	88	7,518
985	6/30/17	8,055	805	81	19	7,925	70.5	8	7,655	88	7,513
1378	6/30/17	8,093	805	82	19	7,976	70.6	8	7,691	88	7,548
						<u>1,534,063</u>					<u>1,430,666</u>

Their billing. . . . .	1,534,063
Our receipts. . . . .	1,430,666
Difference. . . . .	<u>103,397</u>

It is stipulated by the parties that the succeeding months of this statement bear the heading "Un-refined naphtha", and that printing of the balance of the statement be dispensed with.

**Government's Exhibit 81.**

(Received May 5 1917 9 AM Gen'l Auditor's Office)

**GULF REFINING COMPANY**

George H. Tabor, Vice President

Port Arthur, Texas

Refineries:

Port Arthur, Texas; Fort Worth, Texas

A. D. Morgan,

Local Auditor

May 2, 1917.

Mr. L. S. Haskell, General Auditor,  
Gulf Refining Company, Pittsburgh, Pa.

Dear Sir: Our April Yield Statement will show, as a receipt, 146 cars of Gasoline from Kiefer, at a total of 1,098,604 gallons, against a billing from the Gypsy Oil Company—Gasoline Department—of 1,164,303 gallons, a difference of 65,699 gallons, which is accounted for by the fact that the cars arrived here with very large outages.

Attached you will find a list of the cars, showing outages, our receipts, and their billing.

Yours very truly,

P  
cc enc—Mr. Donovan.

(Signed) A. D. Morgan

**Government's Exhibit 82.****RECEIPTS OF KIEFER GASOLINE, APRIL, 1917.**

THEIR BILLING				OUR RECEIPTS			
Car No.	Gross Gal.	Temp.	Net Gal.	Outage	Gross Gal.	Temp.	Net Gal.
960	8,061	40°	8,074	18"	6,762	66°	6,735
1002	8,174	50	8,133	7	7,840	66	7,809
1620	8,020	58	7,975	9	7,574	66	7,544
607	8,016	46	7,997	10-A-2461	7,408	66	7,378
				11-B-2478			
				11-C-2469			
953	8,060	46	8,042	7	7,730	66	7,699
1011	8,170	46	8,151	8	7,764	66	7,333
1331	8,092	46	8,073	8	7,690	66	7,659
2010	8,150	46	8,146	8	7,745	66	7,714
410	8,153	44	8,119	10	7,590	68	7,550
1010	8,195	43	8,192	7	7,860	66	7,829
1038	8,151	43	8,148	8	7,746	66	7,715
1613	8,017	44	8,014	7	7,707	68	7,666
1277	8,093	50	8,052	7	7,762	66	7,731
1602	8,023	50	7,989	7	7,715	66	7,684

## Receipts of Kiefer Gasoline, April, 1917.—Continued.

THEIR BILLING				OUR RECEIPTS			
Car No.	Gross Gal.	Temp.	Net Gal.	Outage	Gross Gal.	Temp.	Net Gal.
229	6,477	52°	6,446	8"	6,113	70°	6,072
1321	8,089	58	8,006	6	7,826	68	7,784
1370	8,088	58	8,005	10	7,530	68	7,490
1378	8,093	52	8,042	10	7,535	68	7,495
622	8,015	54	7,954	10-A-2481	7,462	70	7,412
				10-B-2522			
				10-C-2459			
629	7,604	54	7,562	10-A-2358	7,116	70	7,069
				8-B-2411			
				10-C-2347			
1074	8,091	54	8,029	8	7,691	70	7,544
1237	8,099	54	8,037	10	7,540	70	7,490
1619	8,016	53	7,966	8	7,641	70	7,590
2012	8,147	54	8,099	8	7,707	70	7,656
1462	8,093	50	8,052	10	7,535	70	7,485
924	8,059	54	7,998	6	7,797	70	7,745
934	8,061	54	7,999	7	7,731	70	7,679
1034	8,201	56	8,128	7	7,866	70	7,814
1080	8,185	56	8,112	6	7,919	70	7,866
1611	8,017	54	7,962	7	7,709	70	7,658
1113	8,139	56	8,057	5	7,919	68	7,877
2020	8,149	56	8,091	7	7,788	70	7,736
168	7,016	52	6,911	7	6,702	68	6,666
1148	8,130	52	8,041	5	7,910	68	7,868
1206	8,089	53	8,064	6	7,826	68	7,784
1271	8,095	48	8,065	4	7,950	68	7,908
1384	8,092	48	8,062	5	7,891	68	7,849
434	8,180	46	8,109	8	7,678	68	7,637
1229	8,086	48	8,056	9	7,602	68	7,561
1368	8,093	46	8,074	8	7,691	68	7,650
408	8,136	48	8,054	10	7,575	68	7,535
1156	8,130	48	8,091	10	7,521	68	7,481
1621	8,016	48	7,992	6	7,772	68	7,731
445	8,140	55	8,021	6	7,075	68	7,037
1143	8,371	54	8,271	5	8,145	68	8,102
236	6,509	50	6,486	5	6,326	68	6,292
410	8,153	50	8,087	12	7,419	66	7,389
911	8,055	50	8,015	8	7,655	68	7,614
1015	8,183	52	8,131	8	7,776	68	7,735
1049	8,112	50	8,071	7	7,780	68	7,739
1112	8,132	52	8,072	10	7,523	68	7,483
1272	8,098	50	8,057	7	7,767	68	7,726

## Receipts of Kiefer Gasoline, April, 1917.—Continued.

Car No.	THEIR BILLING			OUR RECEIPTS			
	Gross Gal.	Temp.	Net Gal.	Outage	Gross Gal.	Temp.	Net Gal.
1319	8,096	50°	8,055	6"	7,833	68°	7,791
2028	8,153	52	8,116	7	7,792	68	7,750
1228	8,089	46	8,070	8	7,687	68	7,646
1613	8,017	46	8,004	9	7,571	66	7,541
2019	8,147	46	8,143	7	7,786	68	7,744
1952	8,009	52	7,949	6	7,747	70	7,695
1953	8,010	52	7,950	8	7,609	70	7,558
1954	8,007	54	7,937	10	7,450	70	7,400
159	8,052	52	7,956	6	7,799	68	7,757
449	7,060	52	6,985	11	6,454	74	6,394
1033	8,173	53	8,116	4	8,027	68	7,984
1111	8,137	52	8,077	3	8,034	68	7,991
1132	8,140	53	8,074	4	7,981	68	7,938
1277	8,093	52	8,042	5	7,891	68	7,849
1616	8,017	52	7,972	5	7,830	68	7,788
1949	8,005	49	7,961	10	7,449	70	7,399
1950	8,013	50	7,964	8	7,612	70	7,561
1951	8,011	50	7,962	10	7,454	70	7,404
368	7,076	50	7,011	8	6,694	70	6,649
924	8,059	52	8,009	11	7,420	70	7,371
1034	8,201	52	8,149	8	7,793	70	7,741
1065	8,131	49	8,096	11	7,486	74	7,416
1080	8,185	52	8,133	10	7,620	70	7,569
1247	8,092	50	8,052	7	7,762	70	7,710
1602	8,023	48	7,999	10	7,503	70	7,453
1611	8,017	46	8,004	6	7,773	70	7,721
1006	8,128	50	8,087	8	7,724	70	7,673
2029	8,152	50	8,099	10	7,541	74	7,471
328	7,062	50	7,019	12	6,373	74	6,313
335	7,054	50	7,011	11	6,448	74	6,388
2006	8,146	49	8,102	10	7,536	74	7,466
1945	8,014	48	7,975	10	7,461	72	7,401
1947	8,013	48	7,974	8	7,612	72	7,551
1948	8,006	48	7,967	10	7,450	72	7,390
1220	8,096	44	8,087	7	7,765	72	7,703
1502	12,029	46	12,021	11	11,212	72	11,107
985	8,055	46	8,037	10	7,499	74	7,429
1251	8,096	46	8,077	11	7,454	74	7,384
1178	8,130	46	8,102	10	7,521	72	7,361
1209	8,092	46	8,073	10	7,534	76	7,454
1205	8,082	46	8,063	10	7,524	76	7,444
1946	8,011	48	7,972	8	7,610	72	7,549

## Receipts of Kiefer Gasoline, April, 1917.—Continued.

Car No.	THEIR BILLING			Outage	OUR RECEIPTS		
	Gross Gal.	Temp.	Net Gal.		Gross Gal.	Temp.	Net Gal.
1955	8,011	52°	7,956	5"	7,810	72°	7,748
1956	8,009	52	7,949	7	7,679	72	7,618
1957	8,007	50	7,958	6	7,745	72	7,683
1958	8,007	52	7,947	7	7,677	72	7,616
1959	8,005	52	7,945	7	7,675	72	7,614
1960	8,008	53	7,943	7	7,678	72	7,617
1965	8,013	51	7,958	8	7,612	72	7,551
1387	8,095	52	8,044	10	7,536	72	7,476
305	6,364	56	6,300	11	5,795	74	5,741
1006 X	8,153	54	8,039	10	7,567	74	7,496
1066	8,158	56	8,085	11	7,511	74	7,441
1207	8,090	54	8,028	10	7,532	74	7,462
2010	8,150	54	8,078	12	7,355	74	7,286
2012	8,147	56	8,065	12	7,353	74	7,284
437	8,137	50	8,044	11	7,491	74	7,421
1026	8,173	51	8,127	8	7,767	72	7,705
1271	8,095	50	8,054	10	7,536	74	7,466
1384	8,092	50	8,051	11	7,450	74	7,380
1609	8,023	50	7,989	10	7,503	74	7,433
1624	8,014	50	7,980	11	7,418	74	7,349
2016	8,153	48	8,113	10	7,542	74	7,442
1355	8,090	56	8,017	10	7,532	76	7,452
1963	8,005	62	7,892	9	7,529	76	7,449
1964	8,009	60	7,907	11	7,369	76	7,290
1083	8,140	60	8,046	10	7,578	74	7,507
1237	8,099	60	8,005	12	7,370	74	7,301
1961	8,008	60	7,906	8	7,607	72	7,546
1962	8,011	61	7,904	8	7,610	72	7,549
1011	5,170	60	8,075	5	7,967	72	7,908
1462	8,093	60	7,999	7	7,762	74	7,692
1010	8,195	60	8,100	5	7,991	72	7,927
2022	8,152	58	8,059	7	7,791	72	7,729
1023	8,175	62	8,069	8	7,769	76	7,686
1142	8,387	58	8,291	7	8,015	72	7,951
1968	8,011	49	7,967	7	7,681	72	7,620
1967	8,009	54	7,939	8	7,608	72	7,547
1966	8,006	60	7,904	8	7,605	72	7,544
309	6,662	58	6,586	11	6,090	74	6,032
332	7,065	58	6,982	6	6,815	72	6,760
1029	8,225	58	8,141	5	7,990	72	7,926
1148	8,130	60	8,027	11	7,432	74	7,363

X Transferred from GRCX #427.

## Receipts of Kiefer Gasoline, May, 1917.—Continued.

THEIR BILLING				OUR RECEIPTS			
Car No.	Gross Gal.	Temp.	Net Gal.	Outage	Gross Gal.	Temp.	Net Gal.
1957	8,007	61°	7,925	9"	7,489	72°	7,429
2010	8,150	61	8,066	8	7,710	70	7,659
1066	8,158	54	8,095	11	7,511	70	7,461
1207	8,090	54	8,042	10	7,532	70	7,482
1624	8,014	54	8,045	11	7,511	70	7,461
1207	8,090	54	8,042	10	7,532	70	7,482
1624	8,014	54	8,045	11	7,418	70	7,369
1963	8,005	54	8,036	8	7,570	70	7,520
1964	8,009	54	8,040	10	7,405	70	7,356
437	8,137	54	8,023	10	7,576	68	7,534
1251	8,96	55	8,029	10	7,537	70	7,487
1955	8,011	52	7,974	11	7,318	72	7,259
1961	8,008	52	7,972	8	7,573	72	7,512
1962	8,011	49	7,990	10	7,407	72	7,348
1966	8,006	50	7,980	5" Water 10	7,284	72	7,226
2012	8,147	50	8,120	10	7,537	72	7,477
1968	8,011	52	7,974	9 " 10	6,924	74	6,859
1967	8,009	52	7,973	3 " 8	7,472	72	7,412
1245	8,096	52	8,045	10	7,537	74	7,467
1949	8,005	54	7,959	11	7,312	74	7,244
1952	8,009	56	7,952	12	7,222	74	7,155
1953	8,010	54	7,964	12	7,223	74	7,156
1954	8,007	55	7,955	11	7,314	74	7,246
422	7,044	48	6,992	10	6,535	72	6,483
428	8,175	50	8,082	10	7,611	72	7,550
1178	8,130	50	8,080	11	7,432	72	7,373
620	8,018	50	7,978	A-2518- 8	7,553	72	7,493
				B-2603- 8			
				C-2431-10			
1083	8,140	51	8,094	10	7,578	72	7,518
1237	8,099	54	8,037	8	7,696	72	7,634
1368	8,093	48	8,063	8	7,691	72	7,629
956	8,059	46	8,041	8	7,658	68	7,617
1006	8,128	50	8,087	8	7,724	68	7,683
1148	8,130	52	8,070	6	7,842	68	7,801
1209	8,092	42	8,094	6	7,829	68	7,787
1247	8,093	44	8,084	10	7,535	74	7,465
1331	8,092	50	8,051	8	7,690	68	7,649
1366	8,093	51	8,047	8	7,691	68	7,650
2022	8,152	48	8,137	10	7,541	68	7,501
2024	8,148	48	8,133	10	7,538	68	7,498
1950	8,013	56	7,955	11	7,320	74	7,252

## Receipts of Kiefer Gasoline, May, 1917.—Continued.

THEIR BILLING				OUR RECEIPTS			
Car No.	Gross Gal.	Temp.	Net Gal.	Outage	Gross Gal.	Temp.	Net Gal.
1951	8,011	55°	7,958	12"	7,224	74°	7,157
900	8,055	62	7,954	8	7,655	74	7,584
1384	8,092	62	7,990	10	7,534	76	7,454
1945	8,014	60	7,935	11	7,321	74	7,253
1946	8,011	64	7,917	11	7,318	74	7,250
1948	8,006	62	7,920	11	7,313	74	7,245
1965	8,013	64	7,379	12	7,226	74	7,159
1227	8,088	56	8,057	9	7,610	74	7,539
1973	8,009	52	7,973	9	7,491	74	7,421
1976	8,006	52	7,970	9	7,488	74	7,418
445 x	8,173	50	8,132	2'	7,225	74	7,156
335	7,054	52	6,979	1	6,194	76	6,128
434	8,180	54	8,066	10	7,616	76	7,535
1387	8,095	54	8,033	8	7,693	76	7,612
1609	8,023	52	7,978	11	7,426	76	7,347
1947	8,013	54	7,966	10	7,409	76	7,330
1956	8,009	52	7,973	11	7,316	76	7,238
1958	8,007	54	7,961	9	7,489	76	7,410
1385	8,092	54	8,030	11	7,450	76	7,371
1975	8,008	58	7,941	8	7,576	74	7,506
2014	8,148	58	8,079	11	7,448	74	7,379
1174	8,130	58	8,038	1	7,120	74	7,054
1038	8,151	54	8,088	10	7,589	76	7,509
332	7,065	52	7,012	12	6,376	76	6,308
408	8,136	52	8,060	10	7,575	76	7,494
960	8,061	52	8,010	10	7,505	76	7,425
1229	8,086	54	8,024	10	7,528	74	7,458
1602	8,023	52	7,978	12	7,346	76	7,268
368	7,076	62	7,019	1	6,213	78	7,176
1068	8,137	62	8,093	1	7,315	78	7,227
1080	8,185	62	8,141	1	7,168	78	7,082
1278	8,092	62	8,048	1	7,087	78	7,002
1225	8,095	58	8,012	11	7,453	74	7,384
1859	8,172	58	8,103	1	7,176	78	7,090
1971	8,006	57	7,944	10	7,406	74	7,337
1977	8,009	58	7,942	10	7,409	74	7,340
1955	8,011	62	7,921	6	7,727	74	7,655
1957	8,007	58	7,940	6	7,723	74	7,651
1961	8,008	56	7,951	6	7,725	74	7,653
1963	8,005	58	7,938	5	7,789	74	7,717
1966	8,006	56	7,948	7	7,651	74	7,580

x—GRCX 445 transferred from GRCX 1033.

## Receipts of Kiefer Gasoline, May, 1917.—Continued.

THEIR BILLING				OUR RECEIPTS			
Car No.	Gross Gal.	Temp.	Net Gal.	Outage	Gross Gal.	Temp.	Net Gal.
1969	8,009	56°	8,023	6"	7,725	74°	7,653
392	7,055	61	6,981	3 0	3,872	74	3,836
924	8,059	61	8,002	10	7,503	74	7,423
1962	8,011	61	7,971	11	7,323	74	7,255
1967	8,009	62	7,962	11	7,321	74	7,253
621	8,005	73	7,943	A- 4	7,843	78	7,749
				B- 5			
				C- 4			
1946	8,011	56	7,997	5	7,795	78	7,701
1948	8,006	54	8,003	8	7,574	78	7,483
1953	8,010	58	7,986	6	7,726	78	7,633
1954	8,007	56	7,993	6	7,724	78	7,631
1321	8,089	50	8,023	1 2	7,180	78	7,094
1616	8,017	48	8,033	8	7,642	78	7,550
1945	8,014	48	8,023	5	7,798	78	7,704
1965	8,013	48	8,022	6	7,729	78	7,636
1968	8,011	48	8,020	8	7,578	78	7,487
2024	8,148	48	8,157	10	7,538	78	7,448
1978	8,014	55	8,041	6	7,730	78	7,637
1979	8,015	54	8,048	6	7,731	78	7,638
1982	8,011	54	8,044	7	7,656	78	7,564
2006	8,146	56	8,112	10	7,536	78	7,446
1369	8,092	60	8,059	10	7,534	78	7,444
1981	8,008	58	8,019	8	7,576	78	7,485
1113	8,139	64	8,061	11	7,440	78	7,351
1270	8,088	60	8,055	12	7,360	78	7,272
1327	8,096	58	8,074	11	7,454	78	7,365
2029	8,152	62	8,105	11	7,452	78	7,363
1132 x	8,140	62	8,052				
1355 x	8,090	60	8,048				
1960 x	8,008	60	7,972				
PR car 808 x				2' 4"	5,677	78	5,609
PR car 843 x				3 10	3,457	78	3,416

1,112,507

1,016,789

Their billing. . . . 1,112,507

Our receipts. . . . 1,016,789

Difference. . . . . 95,718

x—Pr cars 808 and transferred from GRCX #1132, 1355 and 1960

## Receipts of Kiefer Gasoline, May, 1917.—Continued.

	Billed	Received	Difference
Kiefer	761900	707225	54675
Drumright	326542	286363	40179
Jenks	16122	15452	670
Cleveland	7943	7749	194
	<hr/> 1112507	<hr/> 1016789	<hr/> 95718

**Government's Exhibit 85.**

Cable Address "Gulfoil" W. U. and A. B. C. Code 4th & 5th Editions.

**GULF REFINING COMPANY**

Frick Building Annex  
Pittsburgh, Pa.

Chas. B. Ellis,  
Traffic Manager.

Petroleum and  
Its Products.

January 15, 1914. File 17-A-Frisco.  
Special Delivery.

Mr. M. R. Powers,

A. G. F. A., St. L. & S. F. RR., St. Louis, Mo.

Dear Sir: Referring to telephone conversation

We want to move 10 cars of gasoline from Kiefer to Port Arthur, to be handled in our own boats to our Eastern distributing stations.

I find nothing but a 37 cent rate published from Kiefer to Port Arthur. Will you kindly arrange to publish a 33 cent rate from Kiefer to Port Arthur, this rate being the same as the northbound rate from Port Arthur to Tulsa, as shown in Leland's tariff #35-I.

If this movement proves satisfactory, I am sure that there will be more of it to move. This business would route via Frisco in connection with K. C. S., or Frisco in connection with the H. & T. C.

I believe that I can induce the Kansas City Southern to participate with you in the 33 cent rate, but, as you originate the business, no doubt you can handle this feature with them.

I must have some information not later than noon tomorrow. Please be sure to call me by long distance telephone at our expense.

Yours truly,

(Signed) C. B. Ellis.

If we make shipment it will have to move immediately and could be handled in shape of reparation claim same as from Ft. Worth to Kiefer. C. B. E.

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**Government's Exhibit 86.**

(Carbon copy)

May 29, 1916.

SWL-A/L-8425-C

Gasoline—rates on—from points in Oklahoma to Beaumont-Port Arthur District.

Mr. C. B. Ellis, T. M.,

Gulf Refining Co., Pittsburgh, Pa.

Dear Sir: Some one has suggested cancellation of item 2546-B, Supplement 40, SWL Tariff 26-T, offering as an excuse that continuation of this figure may jeopardize rates of 27 and 39 cents respectively to Texas Common point territory.

We shall be governed by your requirements in the premises, as to the cancellation of Item 2546-B and shall thank you to fully advise by return mail.

Yours truly,

wmp-bm

A.G.F.A.

5-27

Blind co—Mr. R. B. Merick, Ga., Pittsburgh, Pa.

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**Government's Exhibit 87.**

GULF REFINING COMPANY

G. R. Nutty, Vice President.

Frick Building Annex.

Cable Address "Gulfoil" W. U. and A. B. C. Code 4th & 5th Editions Sales Department.

Chas. B. Ellis, Traffic Manager. Petroleum and its Products.

Pittsburgh, Pa., June 5th, 1916. File 17-A.

Mr. W. M. Powers,

A. G. F. A., St. L. S. F. R. R. Co., St. Louis, Mo.

Dear Sir: Your letter May 29th, SWL A/L-8425-C, in which you advise that someone suggested cancellation of Item 2546-B, Supplement 40, SWL Tariff 26-T.

We do not want this rate cancelled as it is in daily use. We are now moving about eighteen cars per week on this rate.

Yours truly,

(Signed) C. B. Ellis.

(Stamped) Frisco Freight Traffic Department St. Louis, Mo. Jun 6 1916.

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**Government's Exhibit 88.****GULF REFINING COMPANY****Frick Building Annex**

Chas. B. Ellis, Traffic Manager      Petroleum and Its Products  
Pittsburgh, Pa.      February 9, 1915      File 17-A A-7707

Mr. J. R. Christian,  
G. F. A., Sunset Central Lines, Houston, Texas.

Mr. F. G. Reilly,  
A. F. T. M., Frisco Lines, St. Louis, Mo.

Gentlemen: This will acknowledge receipt of your favor January 19th, file A-7159-C, with reference to conversation in St. Louis relative to rates from Port Arthur to Kiefer and Kiefer to Port Arthur, as well as from North Fort Worth to Kiefer and Kiefer to North Fort Worth.

I have gone into this matter from all angles and am going to ask that you arrange for the publication of 30 cents from Port Arthur to Kiefer and 30 cents Kiefer to Port Arthur, and 25 cents from North Fort Worth to Kiefer and from Kiefer to North Fort Worth, applying on naphtha and gasoline.

The present rates between above mentioned points are unreasonable to the extent that they exceed above requested rates, and also exceed published rates from other producing points where the mileage haul and conditions are similar.

Please advise at your earliest possible convenience as to what action in the premises will be taken.

Yours truly,

(Signed) C. B. Ellis.

CC-Mr. R. B. Merriek. GA, Frisco, Pittsburgh.

(Stamped) Frisco Freight Traffic Department St. Louis,  
Mo. Feb 10 1915

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**Government's Exhibit 89.**

(Carbon copy)      March 18, 1915      A-7707-C

Rate Adjustment: Naptha—Port Arthur, Tex. to Kiefer, Okla.

Mr. C. B. Ellis, T. M.,  
Gulf Refining Co., Pittsburgh, Pa.

Dear Sir: Referring to your joint letter of Feb. 9th File 17-A, regarding publication of rate of 30 cents on naptha Port Arthur, Tex. to Kiefer, Okla. Also the same rate in the reverse direction on gasoline and in addition a rate of 25 cents from North Ft. Worth to Kiefer.

Your application has been given careful consideration and this is to advise that in view of present conditions, that of our traffic not yielding sufficient revenue to pay cost of operation and the further fact that we are now endeavoring to increase rather than reduce rates, it will be impracticable to establish the rates at this time which you propose.

Yours truly,

wmp-bm

A.F.T.M.

cc-Mr. J. R. Christian, GFA, Sunset Central Lines, Houston, Tex. Mr. R. B. Merriek, GA, Pittsburgh, Pa.

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**Government's Exhibit 90.**

NIGHT LETTER—The Western Union Telegraph Company

Received at W. U. Bldg., S. W. Cor 7th and Main Sts.,  
Kansas City 305 A RI 28 NL 2268

R R Mitchell

Pittsburgh Pa Jan 18th 14

G F A K C SOU R R Kansas City Mo.

Requested Powers docket rate thirty three cents Kiefer to Port Arthur on gasoline for coastwise shipments He has wired you and Christian for concurrence hope you will concur answer

C B Ellis 647PM

(Stamped) Port Arthur Route General Freight Office  
Reed Jan 19 1914 Received Jan 19 1914 R. R. Mitchell

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**Government's Exhibit 91.**

DAY LETTER—The Western Union Telegraph Company.

Received at Pittsburgh Pa Jany 19 1914 80 KS JY 89 Blue  
R R Mitchell KC S RY Kansas City Mo.

Exchange telegrams relative thirty three cent rate Kiefer to Port Arthur in addition to this southbound rate we are figuring on moving about fifty cars per month or more of naphtha Port Arthur to Kiefer have talked with Powers St. Louis long distance and he will make additional request on Leland today as separate proposition that same be docketed for San Antonio meeting this will permit of majority cars moving under load both ways want you to favor this and use your influence with other lines am trying to get you long distance

C B Ellis 105PM

(Stamped) Port Arthur Route General Freight Office  
Reed Jan 19 1914 Received Jan 19 1914 R. R. Mitchell

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**Government's Exhibit 92.****GULF REFINING COMPANY**

Frick Building Annex

Chas. B. Ellis, Traffic Manager      Petroleum and Its Products  
Pittsburgh, Pa., January 19th, 1914.  
File 17-a-Frisco

Special Delivery.

Mr. W. M. Powers,

AGFA, St. L. &amp; S. F. RR., St. Louis, Mo.

Dear Sir: Referring to my long distance telephone conversation this morning, relative to docketing subject for the San Antonio meeting tomorrow—rate 33 cents per hundred pounds, Naphtha, from Port Arthur and West Port Arthur to Kiefer, Okla.

We are figuring on from 50 to 75 cars of naphtha per month from Port Arthur to Kiefer. I find that the present rate of 43 cents per hundred pounds is prohibitive.

I would thank you to arrange for this 33 cent rate in connection with the Kansas City Southern and Sunset Lines at the earliest possible date.

In Mr. Leland's #35-I, at the present time, there is a 33 cent rate on refined petroleum and its products—Port Arthur and West Port Arthur to Tulsa and we should have a rate not to exceed this rate to Kiefer.

This naphtha is being moved from Port Arthur to Kiefer to be further refined at that point in connection with products now at Kiefer and the outbound shipments will consist of gasoline and, for each car of naphtha moved into Kiefer, there is approximately two cars of gasoline outbound.

I hope that you will have this matter presented at the meeting at San Antonio and, if necessary, give definite notice, having rate published at the very earliest possible date as we will want to begin shipment before the middle of next month. This is absolutely new business.

Would thank you to favor me with advice at the earliest possible date if rate will be arranged for, stating on what date same will become effective.

Yours truly,

(Signed) C B. Ellis

CC-Messrs. Christian and Mitchell.

(Stamped:) Received Jan 21 1914 R. R. Mitchell Port  
Arthur Route General Freight Office Reed Jan 21 1914

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1970 GULF REFINING COMPANY, A CORPORATION, vs.

F. A. Timmons' Record of Unloading Cars—Continued.

Count No.	Car No.	Date Unloaded.	Tank No.	Freight Bill No.
10	1327	1-16-17	805	814
11	428	1-19-17	805	993
	1278	1-19-17	805	994
	1347	1-19-17	805	995
	2025	1-19-17	805	996
12	629	1-29-17	805	1920
	1356	1-29-17	805	1920½
	1358	1-29-17	805	1919
13	328	1-25-17	805	1667
	445	2-4-17	805	182
	1153	1-25-17	805	1668
	1359	1-25-17	805	1669
	2008	1-25-17	805	1670
14	1155	1-29-17	805	1951
	1225	1-29-17	805	1952
	1243	1-29-17	805	1953
	1397	1-31-17	805	2037
	2027	1-29-17	805	1954
15	2013	2-6-17	805	344
16	1462	4-4-17	805	98
17	1061	3-7-17	805	705
	1155	3-7-17	805	704
	1607	3-7-17	805	703
18	950	3-13-17	805	1034
	1507	3-13-17	805	1035
19	1038	3-17-17	805	1295
	1206	3-17-17	805	1294
20	332	3-23-17	805	1666
	1029	3-20-17	805	1521
	1064	3-23-17	805	1665
22	422	5-13-17	857	960
	428	5-13-17	857	958
	1178	5-13-17	857	961
	620	5-13-17	857	955
	1083	5-13-17	857	956
	1237	5-13-17	857	957
	1368	5-13-17	857	959
23	428	6-7-17	805	507
	1083	6-7-17	805	506
24	1201	6-18-17	805	1191

## F. A. Timmons' Record of Unloading Cars—Continued.

Count No.	Car No.	Date Unloaded.	Tank No.	Freight Bill No.
24	1206	6-21-17	805	1333
	1225	6-18-17	805	1189
	1624	6-18-17	805	1190
	1727	6-18-17	805	1185
	1852	6-18-17	805	1183
	1854	6-18-17	805	1182
	1856	6-18-17	805	1184
	1858	6-18-17	805	1181
	1950	6-18-17	805	1186
	1951	6-18-17	805	1187
25	1852	7-21-17	805	1582
	1855	7-21-17	805	1581
	1947	7-25-17	805	1770
26	1946	7-21-17	805	1580
27	1033	8-11-17	805	930
	1206	8-11-17	805	929
	1271	8-14-17	805	1042
	1706	8-11-17	805	933
	1708	8-11-17	805	928
28	924	8-17-17	805	1360
	1721	8-17-17	805	1357
	1728	8-17-17	805	1356
	1774	8-17-17	805	1359
	1798	8-17-17	805	1358
29	1366	8-20-17	805	1624
	1865	8-20-17	805	1628
30	1245	8-31-17	805	2326
31	1710	9-19-17	805	1319
	1786	9-19-17	805	1320
	1978	9-19-17	805	1318
32	1127	10-30-17	805	2232
33	1366	11-1-17	805	219
	1774	11-3-17	805	218
	1978	11-1-17	805	215
34	610	11-9-17	805	379
	1424	11-11-17	805	377
	2027	11-9-17	805	378
35	625	12-5-17	805	2491
	630	12-5-17	805	2489
36	2103	2-3-18	805	191
	2108	2-3-18	805	186

## F. A. Timmons' Record of Unloading Cars—Continued.

Count No.	Car No.	Date Unloaded.	Tank No.	Freight Bill No.
36	2115	2-3-18	805	185
	2119	2-3-18	805	187
	2160	2-3-18	805	183
	2172	2-3-18	805	190
	2177	2-3-18	805	189
	2182	2-3-18	805	188
	2189	2-3-18	805	184
	2198	2-3-18	805	192
37	1400	2-27-18	857	1728
38	1708	3-22-18	805	1691
	2106	3-23-18	857-805	1698
	2107	3-22-18	805	1762
	2116	3-24-18	857	1694
	2120	3-24-18	857	1695
	2149	3-23-18	857-805	1696
	2154	3-23-18	857-805	1697
	2159	3-23-18	857-805	1700
	2197	3-23-18	857-805	1699
39	401	4-11-18	857	552
	406	4-11-18	857	551
	436	4-11-18	857	550
	503	4-11-18	857	554
	554	4-11-18	857	553
40	1250	5-8-18	857	88
	1430	5-8-18	857	87
	1816	5-8-18	857	93
	1854	5-8-18	857	90
	2123	5-8-18	857	89
	2166	5-9-18	857	93½
	2197	5-8-18	857	92
41	422	2-28-17	805	2080
42	1718	2-28-17	805	2082
43	434	3-30-17	805	2483
	1369	3-30-17	805	2482
45	1178	4-27-17	805	1436
46	1209	4-28-17	805	1435
47	434	5-7-17	805	586
48	1229	5-7-17	805	587
49	1850	6-18-17	805	1172
	1853	6-18-17	805	1171

## F. A. Timmons' Record of Unloading Cars—Continued.

Count No.	Car No.	Date Unloaded.	Tank No.	Freight Bill No.
50	1232	6-27-17	805	1757
	1974	6-27-17	805	1758
51	1268	7-14-17	805	755
	1270	7-11-17	805	754
52	449	7-14-17	805	1011
	1037	7-14-17	805	1012
53	1220	7-15-17	805	1180
	1743	7-15-17	805	1181
54	1957	7-20-17	805	1451
	1983	7-20-17	805	1452
55	1956	7-27-17	805	2009
	1959	7-27-17	805	2008
56	1245	8-11-17	805	927
57	2022	8-17-17	805	1156
58	1729	8-20-17	805	1629
59	600	10-1-17	805	2122
	1071	10-1-17	805	2123
60	1624	10-7-17	857	585
	1983	10-7-17	857	584
61	1254	10-14-17	805	1082
	1864	10-14-17	805	1083
62	926	10-30-17	805	2132
63	1981	11-3-17	805	186
64	1265	11-2-17	805	187
	2022	11-2-17	805	185
65	2124	1-13-18	857	715
66	2106	1-20-18	857	2027
	2183	1-20-18	857	2026
67	2150	6-13-18	857	651
	2151	6-13-18	857	652
68	1335	5-9-18	857	568
	1712	5-9-18	857	567
69	924	5-19-18	857	1305
	2178	5-19-18	857	1304
70	2119	6-5-18	805	162
	2171	6-6-18	805	163
71	764	6-28-18	805	1481

1374 GULF REFINING COMPANY, A CORPORATION, vs.

F. A. Timmons' Record of Unloading Cars—Continued.

Count No.	Car No.	Date Unloaded.	Tank No.	Freight Bill No.
72	1211	9-21-18	838	1173
	1446	9-21-18	838	1174
73	1381	10-11-18	805	872
	1967	10-11-18	805	871
74	2110	11-12-18	838	634
	2249	11-12-18	838	633
75	1946	12-31-18	838	1715
	2245	12-31-18	838	1716
76	1930	1-16-19	805	662
	2110	1-15-19	805	661
77	2200	1-29-19	838	1398
	2230	1-29-19	838	1397
78	2207	2-12-19	838	317
	2240	2-12-19	838	316
79	401	2-21-19	857	969
	2155	2	857	970
80	2185	3-17-19	857	1074
	2223	3-17-19	857	1073
81	2120	1-13-18	857	714
82	1072	2-8-18	805	482
	1957	2-8-18	805	228
83	1277	4-26-18	857	1607
	1431	4-26-18	857	1608
84	1607	4-27-18	857	1760
	1979	4-27-18	857	1761
85	2101	5-22-18	857	1543
	2120	5-22-18	857	1542
86	1228	6-25-18	805	1287
	1708	6-25-18	805	1288
	1726	6-25-18	805	1289
	1744	6-25-18	805	1290
	2199	6-25-18	805	1291
87	1116	7-26-18	857	1577
88	1383	9-12-18	838	550
	1728	9-12-18	838	551
	2119	9-12-18	838	552
	2160	9-14-18	838	626
89	1225	9-14-18	838	703
	1455	9-14-18	838	699

## F. A. Timmons' Record of Unloading Cars—Continued.

Count No.	Car No.	Date Unloaded.	Tank No.	Freight Bill No.
89	1470	9-14-18	838	700
	1611	9-14-18	838	698
	2113	9-14-18	838	697
	2170	9-14-18	838	702
	2197	9-14-18	838	701
90	251	9-30-18	838	1764
91	745	10-15-18	838	950
	2112	10-15-18	838	949
92	1707	11-12-18	857	308
93	2173	12-12-18	857	596
	2183	12-12-18	857	597
94	2157	12-16-18	857	763
	1976	12-16-18	857	764
95	2194	12-20-18	857	1079
96	1762	12-30-18	838	1644
	2207	12-20-18	838	1645
97	1956	12-28-18	857	1589
98	2185	1-31-19	838	1477
	2171	1-31-19	838	1473
	1549	1-31-19	838	1478
99	1956	1-17-19	857	682
	2172	1-17-19	857	681
	2178	1-17-19	857	685
	2196	1-17-19	857	684
	2248	1-17-19	857	683
100	2209	1-14-19	805	414

## Government's Exhibit 95.

Partial statement of shipments of BLENDED GASOLINE made from Kiefer, Okla., by Gypsy Oil Company for account Gulf Refining Company consigned directly to customers of Gulf Refining Company.

Invoice Order						
Date.	No.	No.	Sold to.	Destination.	Price.	Note.
12-19-13	K 1717	2681	Manhattan Oil Company	Des Moines, Iowa	\$.1265	(2)
12-27-13	K 1744	2705	Chas. C. Stroll Oil Co.	Louisville, Ky.	.12	(2)
12-29-13	K 1746	2702	Manhattan Oil & Linseed Company	Minnesota Transfer, Minn.	.135	(2)
1- 2-14	K 1	2631	Manhattan Oil Company	Des Moines, Iowa	.1265	(2)

# 1376 GULF REFINING COMPANY, A CORPORATION, vs.

## Shipments of BLENDED GASOLINE—Continued.

Invoice Order					
Date.	No.	No.	Sold to.	Destination.	Price. Note.
1- 1-14	K 2	2753	Winnipeg Oil Company	Winnipeg, Canada	.1075 (1)
1- 5-14	K 16	2729	Northwest Grain Dealers Assn.	Paddington, Canada.	.1075 (1)
1- 7-14	K 17	2753	Winnipeg Oil Company	Winnipeg, Canada	.1075 (1)
1-12-14	K 55	2753	Winnipeg Oil Company	Winnipeg, Canada	.1075 (1)
1-19-14	K 74	2843	St. Louis Oil Co.	St. Louis, Mo.	.0975 (1)
2- 2-14	K 174	2951	Kentucky Consumers Oil Company	Louisville, Ky.	.11 (2)
2-26-14	K 300	3021	St. Louis Oil Co.	Cape Girardeau, Mo.	.095 (1)
3- 3-14	K 326	3103	Climax Western Oil Co.	Minneapolis, Minn.	.1225 (2)
3- 9-14	K 359	3022	Tiona Refining Co.	Indianapolis, Ind.	.11 (2)
3-10-14	K 366	3152	Manhattan Oil Co.	Mitchell, S. D.	.0975 (1)
3-18-14	K 417	3213	Climax Western Oil Co.	Minneapolis, Minn.	.1225 (2)
10- 6-14	K 1251	4348	Union Petroleum Co.	Minneapolis, Minn.	.08 (1)
10-20-14	K 1291	4408	Van Tilburg Oil Co.	Minneapolis, Minn.	.1050 (2)
11- 2-14	K 1350	4450	Manhattan Oil & Linseed Co.	Mitchell, S. D.	.08 (1)
12- 1-14	K 1452	4580	S. L. Collins Oil Co.	Centerville, Iowa	.08 (1)
12-10-14	K 1479	4536	Manhattan Oil & Linseed Co.	Minnesota Transfer	.1050 (2)
12-15-14	K 1492	4612	Pure Oil Company	Minneapolis, Minn.	.1025 (2)
12-15-14	K 1494	4537	Manhattan Oil & Linseed Co.	Mitchell, S. D.	.08 (1)

Note 1—F.O.B. Kiefer, Okla.

Note 2—F.O.B. Destination.

Certified correct

(Signed) L. C. Lyon, Local Auditor.

Pittsburgh Pa—May 20-1919.

## Government's Exhibit 97.

### GULF REFINING COMPANY

G. R. Nutty, Vice President

Frick Building Annex

Cable Address "Gulfoil"

Sales Department

Chas. B. Ellis, Traffic Manager.

Petroleum and  
its products

Pittsburgh, Pa., May 16th, 1916.

File 17-A

Mr. F. C. Reilly,

A. F. T. M., St. L. S. F. R. R., St. Louis, Mo.

Dear Sir: Confirming my telegram t-day requesting that you arrange for publication of seventeen cent rate applying

both north and southbound between Port Arthur, West Port Arthur and Kiefer, on same relative basis as this product is published in Item 3022 $\frac{1}{2}$ , Supplement 41, Leland's 26-T, Item 3559 in Supplement No 3 to 59-G, and in Item 3696 Leland's 44-I.

All of our products from Port Arthur and North Fort Worth is an unfinished product, and is passed through the refinery at Kiefer, and the products secured from this partial refining at Kiefer is an unfinished product and is transported to our Port Arthur refinery, and at that point further refined, and we are entitled to the unrefined rate as outlined above.

I will be glad to have you advise if you will arrange for the publication of these rates by your line between North Fort Worth and Kiefer, and Kiefer and North Fort Worth, in connection with the Southern Pacific and K. C. S. to Port Arthur. Am sending copy of this letter to Mr. Mitchell and Mr. Christian at St. Louis, asking that they participate in this rate.

It was my intention to be in St. Louis to-day, but owing to having to go East tonight, it is impossible for me to be there.

Yours truly,

(Signed) C. B. Ellis.

CC—Mr. R. R. Mitchell, G. F. A., K. C. S. Ry., St. Louis, Mo.

CC—Mr. J. R. Christian, G. F. A., St. Louis, Mo.

CC—Mr. D. A. Roberts, G. A., K. C. S. Ry., Pgh, Pa.

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**Government's Exhibit 98.**

**WESTERN UNION TELEGRAM**

Received at Bu Pittsburgh Pa 337PM May 16 1916.

F C Reilly 2072

St Louis Mo

Will you please arrange through Southwestern Committee for publication seventeen cent rate crude unfinished naphtha Port Arthur West Port Arthur to Kiefer and Kiefer to Port Arthur West Port Arthur and twenty cents from North Fort Worth to Kiefer and Kiefer to North Fort Worth on same relative basis now published in item thirty twenty two half supplement forty one Lelands twenty six tee

C B Ellis 355P

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**Government's Exhibit 99.**

Copy

No. 3994

National Refining Company

v.

Missouri, Kansas & Texas Railway Company et al.

Submitted October 19, 1911, Decided May 7, 1912.

Complainant shipped from Muskogee, Okla., to Coffeyville, Kan., a number of carloads of the so-called lighter ends of petroleum oil, which had been separated from the crude oil by a process of skimming, but was useless for commercial purposes until a further process of refinement had been undergone. Defendants assessed the rates applicable to refined oil; Held, that a reasonable rate on the commodity shipped would not have exceeded by more than 2 cents per 100 pounds the rates contemporaneously applicable to crude oil, which relationship should be established for the future. Reparation awarded.

E. J. Blandin and C. D. Chamberlain for complainant.

Joseph M. Bryson, C. S. Burg, and J. W. Allen for Missouri, Kansas & Texas Railway Company.

Herbert J. Campbell for Missouri Pacific Railway Company and St. Louis, Iron Mountain & Southern Railway Company.

**REPORT OF THE COMMISSION.**

By the Commission:

The complainant is a corporation engaged in the oil business and has a refinery at Coffeyville, Kans. In its petition, filed April 5, 1911, it alleges that unreasonable rates were charged by defendants for the transportation from Muskogee, Okla., to Coffeyville of a certain distillate of petroleum oil consisting of the lighter ends of the crude oil. Reparation and the establishment of a reasonable rate are sought.

The oil in question was purchased F. O. B. cars at Muskogee from two concerns, the Merchants Oil Company and the Muskogee Refining Company, and was shipped by these concerns for complainant's account and under its instructions. Of the 77 carloads covered by freight bills filed in the record, 51 moved over the Missouri, Kansas & Texas Railway between October 8, 1909, and March 25, 1910. The weight of these shipments aggregated 2,900,159 pounds, and charges

were paid by complainant in the sum of \$3,480.02, based on a rate on 12 cents per 100 pounds.

The remaining 26 carloads moved over the Missouri, Oklahoma & Gulf Railway and the St. Louis, Iron Mountain & Southern Railway, hereinafter referred to as the Iron Mountain route, the charges being assessed at various rates. During November and December, 1909, 10 carloads, of an aggregate weight of 573,091 pounds, were shipped, and charges were collected thereon in the sum of \$859.62, at a rate of 15 cents per 100 pounds. From March 24 to April 30, 1910, 9 carloads, of an aggregate weight of 529,089 pounds, were shipped, and charges were paid in the sum of \$634.90, at a rate of 12 cents per 100 pounds. During May, 1910, 7 carloads, of an aggregate weight of 363,707 pounds, were shipped, and charges were paid thereon in the sum of \$1,309.35, at a rate of 36 cents.

The distance from Muskogee to Coffeyville over the Iron Mountain route is 98 miles. The rate of 12 cents per 100 pounds charged by the Missouri, Kansas & Texas Railway Company was the rate applicable to the transportation of crude oil during all of the period when these shipments were made. Over the Iron Mountain route a rate of 15 cents for the transportation of crude oil was in force during November and the greater part of December, 1909. Effective December 25, 1909, this rate was reduced to 12 cents, and so remained until June 30, 1910, when it was further reduced to 10 cents per 100 pounds. The rate of 36 cents charged on the 7 shipments in May, 1910, was the fifth-class rate applicable to the transportation of refined oil. On September 12, 1910, the Missouri, Kansas & Texas reduced its rate on refined oil, Muskogee to Coffeyville, from 36 to 17 cents; but the rate on refined oil, over the Iron Mountain route is still 36 cents; although to Kansas City and certain other points to which the traffic moves through Coffeyville this route maintains 17-cent rate on refined oil. At the time that the crude-oil rate was reduced to 10 cents the Iron Mountain route established a rate of 12 cents on fuel oil, which had formerly taken the same rate as crude oil. The rate on crude oil was reduced from 15 to 12 cents via the Missouri, Kansas & Texas on February 13, 1909, and via the Iron Mountain route on December 25, 1909.

Under the Western Classification petroleum oil and its products are rated fifth class. But it has been the practice of carriers in this territory to fix commodity rates lower than the class rates between points where there is any considerable movement of petroleum oil, and these commodity rates have

come to be the normal rates in comparison with which other rates for the transportation of petroleum oil and its products in this territory are to be measured.

The rates on crude oil, as named above, over both routes were commodity rates, but no commodity rate on refined oil between Muskogee and Coffeyville was published until September 12, 1910, which was subsequent to the movement of all the shipments under consideration; and, therefore, if they are to be classed as refined oil, the lawful rate on all of these shipments, under the tariffs in force, was 36 cents. It is the contention of the carriers that they should have been so charged. Complainant asserts that they should have moved under the rates applicable to the transportation of crude oil, and that in view of the reduction in the rate on crude oil to 10 cents per 100 pounds, though that reduction was made subsequently to these shipments, the charges should be based on a rate not exceeding 10 cents per 100 pounds.

Upon the arrival of the shipments at Coffeyville they were examined by an inspector of the Western Railway Weighing & Inspection Bureau, who classified the commodity as a refined, oil, and thereupon bills for the difference between the amount paid and the amount that would have been paid, based on the rate applicable to refined oil, were presented to complainant. These undercharge bills, amounting to about \$8,000, have not been paid, complainant refusing payment until the proper rate has been determined by the Commission.

The product that was shipped seems to have no distinct commercial designation or trade name; by complainant it is referred to as "crude product," one of the shippers described it in the bills of lading as "crude benzine"; the carriers classed it as refined oil. The evidence shows that the crude oil had undergone a skimming process, and that this commodity was one of the two resulting products. The Muskogee crude, as it comes from the well, has too low a fire test to be salable as fuel oil; by the skimming process the lighter ends of the oil are extracted, and the heavier residue becomes marketable as fuel oil.

This skimming process is accomplished by distillation carried just far enough to separate the lighter from the heavier oil, the former amounting to about one-fourth part of the oil. The extracted product, though not separated in accordance with any specifications, may, therefore, properly be roughly described as a light end distillate, and that designation will be used in this report. It was this product that was shipped, and complainant's testimony was to the effect that it had no commercial value except for refining purposes; that

at complainant's refinery it was kept separate from the crude oils and refined into gasoline, naphtha, turpentine substitute, and a residuum sold as fuel oil.

For refining purposes this light-end distillate commanded a higher price than the crude oil from which it was extracted. Complainant's president testified that the price of the Muskogee crude oil at the time of purchase was 2 cents per gallon; he was not certain, but thought he paid 3 cents for the light-end distillate. The information of defendants was to the effect that the price was  $3\frac{1}{4}$  cents. Complainant's president testified that, at the time of this purchase, he was in special need of material for lighter-end products, and for this reason was willing to pay a price higher than is customary for this distillate. Under ordinary circumstances it would be more profitable to use a straight crude oil.

Complainant's testimony was to the effect that this light-end distillate met a specific demand that was not met by the crude oil, and that, in view of this demand, a higher price was paid for it than would be paid for the crude oil. Whether or not that demand was a special one, existing only at that particular time so far as complainant is concerned, does not affect the essential facts.

As we have seen, the rate of 36 cents on refined oil at the times these shipments moved was the fifth class rate, and was applicable only because no commodity rate had been established between Muskogee and Coffeyville. Its unreasonableness is clearly indicated by the fact that, a few months later, one of the routes established a commodity rate of 17 cents, less than one-half of the class rate, and the other route maintains a 17-cent rate to points much more distant than Coffeyville. Moreover, this light-end distillate, while it had been increased in value by a process of manufacture, was not what is commercially understood as a refined product of petroleum oil. It was of value only as a material for further process of refinement, and its price of  $3\frac{1}{2}$  cents was materially below the prices of the articles into which it was ultimately separated. If 17 cents per 100 pounds is a reasonable rate for the transportation of gasoline, naphtha, and other products of petroleum oil, it is too high for the movement of this light-end distillate.

In determining rate to be applied to the transportation of this commodity we are assisted by the action of one of the routes in regard to fuel oil, on which it has established a rate of 2 cents in excess of the rate on crude oil. Fuel oil is produced from the Muskogee crude oil by the identical process that extracts this light-end distillate. Each has under-

gone the same degree of manufacture, and, while there is some difference between the prices of the fuel oil and the light-end distillate, the gap between them is not so great as that which separates them from the commercially refined products. The record leads us to conclude that a rate not more than 2 cents per 100 pounds in excess of the rate on crude oil would be a reasonable rate from Muskogee to Coffeyville on this distillate.

Complaint is made that the crude-oil rates of 12 and 15 cents applied to some of these shipments was unjust and unreasonable. The evidence presented in support of this contention is a reference to the subsequent reduction of the rate to 10 cents and a number of exhibits showing the rates on crude oil between various points. Upon the record we are not convinced that these rates of 12 and 15 cents were unreasonable at the times they were in force. The commission has repeatedly held that the voluntary reduction of a rate is not satisfactory proof of the unreasonableness of the prior rate.

Upon consideration of all the facts appearing of record, the Commission is of opinion and finds that a rate for the transportation from Muskogee to Coffeyville of the light-end distillate produced by the so-called skimming process that exceeded the rate contemporaneously charged for the transportation of crude oil by more than 2 cents was unjust and unreasonable, and that the carriers defendant herein should establish and maintain for a period of not less than two years this relationship between the rates on crude oil and this light-end distillate.

We further find that complainant made the shipments as described in the foregoing statement of facts; that the charges paid by complainant, in the sum of \$1,309.35, at a rate of 36 cents, on 7 carloads of this light-end distillate which moved during May, 1910, over the lines of the Missouri, Oklahoma & Gulf Railway and St. Louis, Iron Mountain & Southern Railway, as hereinbefore set forth, were unjust and unreasonable so far as they exceeded \$509.19, the charges which would have accrued at the reasonable rate of 14 cents per 100 pounds; that complainant has been damaged in the difference between said amounts; and that it is, therefore, entitled to reparation from said defendants in the sum of \$800.16, with interest from August 15, 1910.

We further find that the rate of 36 cents per 100 pounds claimed by defendants on the remaining shipments was unjust and unreasonable so far as it exceeded 14 cents per 100 pounds for the transportation over the Missouri, Kansas & Texas Railway, and so far as it exceeded 17 cents on the ship-

ments prior to December 25, 1909, over the Missouri, Oklahoma & Gulf Railway and the St. Louis, Iron Mountain & Southern Railway, and so far as it exceeded 14 cents on shipments over the latter route after December 25, 1909. The payments on these several shipments having been less than the amounts here found to be just and reasonable, the carriers should collect the amounts due thereon.

The record indicates, as noted, that there is no trade name or commercial designation for the commodity here in question; and we deem it best to leave the description of this commodity, in the first instance, to defendants, who are doubtless able to so amend their tariffs as to establish the rates above found reasonable in such language as will not lend itself to misunderstanding or afford opportunities for misbilling. If the tariffs are not amended within sixty days so as to conform to our conclusions, an order respecting the rates for the future will be entered. An award of reparation will be made at this time.

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**Government's Exhibit 100.**

4	Saturday, March 31, 1917.				5
Car	Keiffer	79.5	25+	437	
Car	Keiffer	80.7	25+	434	
Car	Keiffer	80.1	25+	1369	
Car	Keiffer	79.4	25+	1624	
Car	Keiffer	80.0	25+	1021	
Car	Keiffer	78.3	25+	1211	
Car	Keiffer	78.3	25+	329	
Car	Keiffer	78.9	25+	1150	
Car	Keiffer	79.0	25+	1718	
Car	Keiffer	79.5	25+	915	
Car	Keiffer	78.7	25+	1239	
Car	Keiffer	78.6	25+	251	
Car	Keiffer	79.1	25+	1137	

24	Tuesday, April 10, 1917.					25
Cars	805	Gasoline	39995	60.9	25+	1148
Cars		Ptrs Naps	11348	54.9	25+	1368
Cars		Ptrs Naps	11348	54.8	25+	1229
Cars		Ptrs Naps	11348	54.8	25+	434
Cars		Ptrs Naps	11348	54.9	25+	1321
Cars	805	P.M.G.	40029	58.0	25+	1370
Cars	838	P.M.G.	40046	58.0	25+	1378

1384 GULF REFINING COMPANY, A CORPORATION, *vs.*

30	Thursday, April 12, 1917.				31
Car	Keiffer	78.0	25+		408
Car	Keiffer	75.1	25+		911
Car	Keiffer	75.6	25+		1049
Car	Keiffer	76.3	25+		1319
Car	Keiffer	76.0	25+		410
Car	Keiffer	77.1	25+		1613
Car	Keiffer	76.6	25+		1228
Car	Keiffer	78.0	25+		1272
Car	Keiffer	74.5	25+		2028
Car	Keiffer	76.6	25+		2019
Car	Keiffer	78.0	25+		236
Car	Keiffer	78.1	25+		1015
Car	Keiffer	76.8	25+		1112
Car	Keiffer	77.6	25+		1156

42	Tuesday, April 17, 1917.				43
Cars	Keiffer	75.9	25+		924
Cars	Keiffer	75.0	25+		1949
Cars	Keiffer	78.0	25+		1952
Cars	Keiffer	74.6	25+		1247
Cars	Keiffer	74.0	25+		1086
Cars	Keiffer	76.4	25+		1611
Cars	Keiffer	76.0	25+		1954
Cars	Keiffer	76.9	25+		1953
Cars	Keiffer	74.6	25+		1950
Cars	Keiffer	77.0	25+		1602
Cars	Keiffer	74.4	25+		1006
Cars	Keiffer	76.3	25+		368
Cars	Keiffer	75.9	25+		1034
Cars	Keiffer	75.7	25+		1951

50	Thursday, April 19, 1917.				51
Keiffer Cars	75.6	25+			985
Keiffer Cars	74.1	25+			1065
Keiffer Cars	75.7	25+			449
Keiffer Cars	75.3	25+			2029
Keiffer Cars	75.0	25+			2006
Keiffer Cars	74.7	25+			328
Keiffer Cars	74.6	25+			335
Keiffer Cars	74.7	25+			1251

54	Saturday, April 21, 1917.				55
838	Pts Nap 7626	55.1	25+		1946

## UNITED STATES OF AMERICA.

1385

838	Pts Nap	7626	55.0	25+	1960
838	Pts Nap	7626	55.1	25+	1945
838	Pts Nap	7626	55.0	25+	1948
838	Pts Nap	7626	55.3	25+	1965

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66                      Saturday, April 28, 1917.                      67

511	Navy Gasoline	64.0	25+
520	Gasoline	60.0	25+
805	Gasoline	61.5	25+
857	Gasoline	60.0	25+
829	Crude Naphtha	52.9	

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68				69
Car	Keiffer	74.3	25+	1006
Car	Keiffer	74.4	25+	1023
Car	Keiffer	78.8	25+	1209

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80				81
Car	Keiffer	75.6	25+	1206
Car	Keiffer	75.7	25+	1061
Car	Keiffer	75.7	25+	1960
Car	Keiffer	75.7	25+	325
Car	Keiffer	75.6	25+	1113
Car	Keiffer	75.8	25+	900
Car	Keiffer	75.2	25+	1134
Car	Keiffer	75.3	25+	1945
Car	Keiffer	74.9	25+	1946
Car	Keiffer	75.2	25+	1948
Car	Keiffer	75.1	25+	426
Car	Keiffer	74.9	25+	1965
Car	Keiffer	75.5	25+	960

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94				95
Car	Keiffer	78.9	25+	1321
Car	Keiffer	77.5	25+	437

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100				101
Car	Keiffer	76.0	25+ )	620A
Car	Keiffer	75.3	25+ )	428
Car	Keiffer	77.0	25+ )	422
Car	Keiffer	77.6	25+ )	1368
Car	Keiffer	76.9	25+ )	1237

1386 GULF REFINING COMPANY, A CORPORATION, vs.

Car	Keiffer	77.2	25+)	1083
Car	Keiffer	73.2	25+)	1962
Car	Keiffer	73.3	25+)	Over at 95 1961
Car	Keiffer	76.7	25+)	Dry at 363 1178
Car	Keiffer	73.9	18+)	1955
Car	Keiffer	73.7	25+)	2012
Car	Keiffer	76.6	25+)	620B
Car	Keiffer	73.4	25+)	1966
Car	Keiffer	76.2	25+)	620C
Car	Keiffer	73.3	25+)	1957
Car	Keiffer	73.6	25+)	1967

110	Thursday, May 17, 1917.				111
Car	Keiffer	81.2	19+ GERR		1041
Car	Keiffer	80.9	20+ WF&NW		4132
Car	Keiffer	76.2	25+		1976
Car	Keiffer	74.0	25+		900
Car	Keiffer	76.1	25+		1227
Car	Keiffer	76.5	25+		1973

128	Tuesday, May 29, 1917.					129
Cars	838	Painters Naptha	7626	54.8	25+	1945
Cars	838	Painters Naptha	7626	54.8	25+	1979
Cars	838	Painters Naptha	7626	54.8	25+	1968
Cars	838	Painters Naptha	7626	54.7	25+	1954
Cars	838	Painters Naptha	7626	54.7	25+	1945
Cars	838	Painters Naptha	7626	54.8	25+	1982
Cars	838	Painters Naptha	7626	54.8	25+	1978
Cars	838	Painters Naptha	7626	54.8	25+	1965
Cars	838	Painters Naptha	7626	54.8	25+	1946
Cars	838	Painters Naptha	7626	54.8	25+	1953

132					133
Cars	Keiffer	73.9	25+		1859
Cars	Keiffer	60.5	+17	"C"	621
Cars	Keiffer	70.7	25+		1068
Cars	Keiffer	74.2	25+		1321
Cars	Keiffer	70.0	+15	"B"	621
Cars	Keiffer	70.6	BO	"A"	621
Cars	Keiffer	70.6	25+		368
Cars	Keiffer	74.3	25+		1080
Cars	Keiffer	72.2	25+		1015

136	Thursday, May 31, 1917.				137
Cars	Keiffer	74.9	25+ Car #		2029

## UNITED STATES OF AMERICA.

1387

Cars	Keiffer	74.5	25+	Car	1113
Cars	Keiffer	74.5	25+		1278
Cars	Keiffer	75.2	25+	Car	#1327
Cars	Keiffer	74.4	25+	Car	1270
Cars	Keiffer	70.1	25+		843
Cars	Keiffer	75.5	25+		1981
Cars	Keiffer	61.9	25+		808

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150                      Tuesday, June 5, 1917.                      151

838	Ptrs. Nap.	11348	54.9	25+	368
838	Ptrs. Nap.	11348	54.8	25+	1174
838	Ptrs. Nap.	11348	54.8	25+	1952
838	Ptrs. Nap.	11348	54.7	25+	335
838	Ptrs. Nap.	7626	54.7	25+	1951
338	Ptrs. Nap.	7626	54.6	25+	1225
838	Ptrs. Nap.	7626	54.7	25+	1727
838	Ptrs. Nap.	7626	54.6	25+	1851
838	Ptrs. Nap.	7626	54.7	25+	1950
838	Ptrs. Nap.	7626	54.6	25+	1624

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152                      Thursday June 7, 1917.                      153

520	Navy Gasoline	61.8			140-361
511	Gasoline	61.0			133-390
805	Gasoline	61.9			112-394
957	Gasoline	61.2			127-370
829	Crude Naphtha	MT			
838	Pts. Naphtha	54.0			210-410
805-838	Gasoline 40819	60.5	25+		1974

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158                      Saturday, June 9, 1917.                      159

Car	Keiffer	73.5	25+		1788
Car	Keiffer	74.3	25+	1782	1732
Car	Keiffer	75.3	25+		150
Car	Keiffer	73.3	25+		1855
Car	Keiffer	75.0	25+		1333
Car	Keiffer	72.9	25+		1780
Car	Keiffer	73.5	25+		1957
Car	Keiffer	73.5	25+		1955
Car	Keiffer	75.2	25+		1774
Car	Keiffer	71.4	25+		1366

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164                      Tuesday, June 12, 1917.                      165

Cars	Keiffer	73.4	25+		1966
Cars	Keiffer	70.7	17+		159

1388 GULF REFINING COMPANY, A CORPORATION, vs.

Cars	Keiffer	74.8	25+	1251
Cars	Keiffer	74.2	25+	1377
Cars	Keiffer	72.8	25+	1232
Cars	Keiffer	74.1	25+	1026
Cars	Keiffer	74.0	25+	2014
Cars	Keiffer	74.4	25+	985
Cars	Keiffer	74.0	25+	1034
Cars	Keiffer	74.7	25+	1378
Cars	Keiffer	73.3	25+	1859
Cars	Keiffer	74.3	25+	960
Cars	Keiffer	73.6	25+	2022

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168 Thursday, June 14, 1917. 169

Car	Keiffer	76.3	25+	1866
Car	Keiffer	75.0	25+	1400
Car	Keiffer	74.9	25+	1706
Car	Keiffer	76.8	25+	1268
Car	Keiffer	76.4	25+	1218
Car	Keiffer	73.9	25+	1946
Car	Keiffer	76.0	25+	2010
Car	Keiffer	74.4	25+	1209
Car	Keiffer	75.9	25+	1040
Car	Keiffer	74.4		1743
Car	Keiffer	74.7		1984
Car	Keiffer	75.7		1437
Car	Keiffer	75.8		1865

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172 Saturday, June 16, 1917. 173

Car	Keiffer	74.8	25+	2029
Car	Keiffer	75.5	25+	1869
Car	Keiffer	75.0	25+	1775
Car	Keiffer	76.3	25+	1945
Car	Keiffer	75.8	25+	1871
Car	Keiffer	75.5	25+	1860
Car	Keiffer	75.0	25+	1270
Car	Keiffer	75.3	25+	1870
Car	Keiffer	77.3	25+	1981
Car	Keiffer	75.6	25+	1864
Car	Keiffer	75.5	25+	1959
Car	Keiffer	74.9	25+	1861

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182 Thursday, June 21, 1917. 183

520	Navy Gasoline	61.8	25+	137-362
511	Gasoline	58.0	25+	135-392

## UNITED STATES OF AMERICA.

1389

805	Gasoline	64.0	25+	110-385
857	Gasoline	59.3	25+	136-400
929	Crude Naphtha	54.6		

184				185
Car	Unrefined Naphtha	74.7	25+	1857-1206

230	Saturday, July 14, 1917.			231
520	Navy Gasoline	61.6	25+	138-357
511	Gasoline	58.7	25+	135-388
805	Gasoline	59.5	22+	135-400
857	Gasoline	MT		MT
829	Crude Naphtha	MT		MT

232				233
Car	Unrefined Naphtha	75.3	23+	1268
Car	Unrefined Naphtha	71.1	22+	1037
Car	Unrefined Naphtha	71.9	21+	449

234	Sunday July 15, 1917.			235
520	Navy Gasoline	MT		MT
511	Gasoline	58.9	25+	
805	Gasoline	66.3	24+	2 Filt.
857	Gasoline	MT		MT

234				235
Car	Unrefined Naphtha	76.1	18+	1220
Car	Unrefined Naphtha	76.3	18+	1743

250	Saturday, July 21, 1917.			251
520	Navy Gasoline	61.7	25+	138-358
511	Gasoline	58.4	25+	131-388
805	Gasoline	62.2	25+	140-376
838	Painters Naphtha	53.7	25+	206-416
829	Crude Naphtha	53.6		
805-838	60° Gasoline 41296	60.3	25+	1980

252				253
Car	Unrefined Naphtha	76.5	25+	1946
Car	Unrefined Naphtha	75.5	25+	1855
Car	Unrefined Naphtha	75.3	25+	1852

302	Saturday, August 11, 1917.			303
520	Navy Gasoline	61.4	25+	136 36 95%

1390 GULF REFINING COMPANY, A CORPORATION, vs.

511	Gasoline	58.1	25+	143-390
805	Gasoline	62.1	25+	138-384
838	Painters Naphtha	54.0	25+	139-361
829	Crude Naphtha	52.1		
805-838	Gasoline	42046 58.5	25+	1953
805-838	Gasoline	42075 58.4	25+	Car No. 1970
<hr/>				
304				305
Car	Unrefined Naphtha	76.6	21+	1245
<hr/>				
304				305
Car	Unrefined Nap.	73.7	25+	1033
Car	Unrefined Nap.	74.5	25+	1706
Car	Unrefined Nap.	74.2	25+	1708
Car	Unrefined Nap.	74.2	25+	1206
<hr/>				
308	Tuesday, August 14, 1917.			309
520	Navy Gasoline	61.5	25+	140-364 95%
511	Gasoline	58.1	25+	138-394
805	Gasoline	61.5	25+	126-396
<hr/>				
310				311
Cars	Unrefined Naphtha	73.8	25+	1271
<hr/>				
344	Thursday, Aug. 30, 1917.			345
520	Navy Gasoline	61.2	25+ Over @ 138	Dry @ 360 95%
511	Gasoline	57.3	25+ Over @ 148	Dry @ 400
805	Gasoline	62.0	25+ Over @ 132	Dry @ 396
357	Painters Naphtha	53.6	25+ Over @ 200	Dry @ 410
838	Painters Naphtha	54.3	25+ Over @ 206	Dry @ 412
<hr/>				
346				347
805-838	Gasoline	42320 57.5	25+ F	1978
805-838	P. M. Gasoline	42317 57.5	25+ F	1979
838	Painters Naphtha	11348 54.2	25+	1974
838	Painters Naphtha	11348 54.2	25+	1963
838	Painters Naphtha	11348 54.2	25+	1948
<hr/>				
356	Wednesday, 9-5-17.			357
520	Navy Gasoline	61.2	25+ Over @ 150	Dry @ 360 95%
511	Gasoline	57.2	25+ Over @ 145	Dry @ 400
512	Gasoline	57.1	25+ Over @ 150	Dry @ 400
305	Gasoline	62.8	25+ F Over @ 100	Dry @ 390
838	Pts. Naphtha	54.5	25+ Over @ 200	Dry @ 412

## UNITED STATES OF AMERICA.

1391

358						359
805-838	Gasoline	42458	57.0	25+	F	428
838	Pts. Nap.	7626	54.3	25+	F	1863
838	Pts. Nap.	7626	54.5	25+	F	1378
838	Pts. Nap.	7626	54.5	25+	F	1424
838	Pts. Nap.	7626	54.5	25+	F	1153
838	Pts. Nap.	7626	54.5	25+	F	1351

## Government's Exhibit 101.

2	Friday, August 10, 1917.					3
520	Navy Gasoline	61.5	25+			
511	Gasoline	58.1	25+			
805	Gasoline	61.6	25+			
838	Painters Naptha	54.1	25+			
4						5
Car	Unrefined Naptha	73.6	25+			956
Car	Unrefined Naptha	74.1	25+			2000
Car	Unrefined Naptha	73.5	25+			1970
Car	Unrefined Naptha	73.0	25+			1378
Car	Unrefined Naptha	73.8	25+			1321
338	Painters Nap. 7626	54.5	25+			1009
838	Painters Nap. 7626	54.3	25+			1740
838	Painters Nap. 7626	54.3	25+			1857
838	Painters Nap. 7626	54.3	25+			1225
838	Painters Nap. 7626	54.1	25+			1108
805-838	Gasoline 41970	58.8	25+	F EBP		1430
805-838	Gasoline 41999	58.8	25+	F EBP		1850
805-838	Gasoline 42004	57.8	25+	F EBP		1333

8	August 13, 1917, Monday.					9
838	Pts Nap.	11348	54.3	25+	OK GRX	1963
338	Pts Nap.	7626	54.3	25+	OK GRX	1037
838	Pts Nap.	7626	54.3	25+	OK GRX	1723
838	Pts Nap.	7626	54.3	25+	OK GRX	1981
838	Pts Nap.	7626	54.3	25+	OK GRX	1716
838	Pts Nap.	11348	54.4	25+	OK GRX	915
838	Pts Nap.	7626	54.3	25+	OK GRX	1759
838	Pts Nap.	11348	54.4	25+	OK GRX	939
838	Pts Nap.	7626	54.3	25+	OK GRX	1950
838	Pts Nap.	7626	54.3	25+	OK GRX	1006
838	Pts Nap.	11348	54.5	25+	OK GRX	1437
838	Pts Nap.	11348	54.5	25+	OK GRX	1979
838	Pts Nap.	11348	54.3	25+	OK GRX	1860

1392 GULF REFINING COMPANY, A CORPORATION, vs.

14 Friday, August 17, 1917 15

520	Navy Gasoline	62.5	25+	140-362
511	Gasoline	58.7	25+	146-400
805	Gasoline	60.8	25+	130-407
829	Crude Naphtha	54.4		

16 17

Cars	Unrefined Naphtha	74.0	25+	924
Cars	Unrefined Naphtha	73.9	25+	1728
Cars	Unrefined Naphtha	73.4	25+	1721
Cars	Unrefined Naphtha	74.6	25+	1774
Cars	Unrefined Naphtha	74.7	25	1798
Cars	Unrefined Naphtha	76.4	20+	2022

20 Monday, August 20, 1917. 21

520	Navy Gasoline	60.8	25+	Over at 140	Dry 362	94%
511	Gasoline	58.3	25+	Over at 150	Dry 400	
805	Gasoline	61.3	25+	Over at 140	Dry 374	

24 25

Car	Unrefined Naphtha	75.8	25+	1366
Car	Unrefined Naphtha	75.4	25+	1865
Car	Unrefined Naphtha	77.5	20+	1729

Wednesday, August 29, 1917.

Painters Naptha	7626	54.0	25+	1854
Painters Naptha	7626	53.9	25+	1858
Painters Naptha	7626	53.9	25+	1966

48 Friday, August 31, 1917. 49

520	Navy Gasoline	61.2	25+	Over at 145	Dry at 360	97%
511	Gasoline	57.5	25+	Over at 140	Dry at 395	
805	Gasoline	62.1	25+	Over at 110	Dry at 394	

50 51

Car	Unrefined Naphtha	72.3	25+	1245
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68 Tuesday, Sept. 11th, 1917. 69

520	Navy Gasoline	60.9	25+	NG Over 136	Dry 360-95
511	Gasoline	57.0	25+	NG Over 140	Dry 398
512	Gasoline	57.0	25+	NG Over 150	Dry 395
805	Gasoline	60.9	25+	NG Over 125	Dry 400
838	Ptrs. Naphtha	54.7	+25	FNG Over 197	Dry 417

## UNITED STATES OF AMERICA.

1393

70

838	Ptrs. Nap.	7626	54.7	25+ F	1054
838	Ptrs. Nap.	7626	54.8	25+ F	1977
838	Ptrs. Nap.	7626	54.7	25+ F	1984
838	Ptrs. Nap.	7626	54.9	25+ F	961
838	Ptrs. Nap.	7626	54.6	25+ F	1852
838	Ptrs. Nap.	7626	54.8	25+ F	1981
805-838	Gasoline	42522	57.0	25+	1949
805-838	Gasoline	42540	57.1	25+	1033

71

82

Tuesday, September 18th, 1917.

83

520	Navy Gasoline	61.2	25+	140	360	95%
512	Gasoline	57.0	25+ F	148	393	
805	Gasoline	64.2	25+ F	122	393	
857	Gasoline	58.0	25+	156	382	
838	Painters Naptha	53.4	25+	195	428	

84

Tuesday, September 18, 1917.

85

805-838	Gasoline	42654	57.1	25+ F	1953
838	Ptrs. Nap.	11348	54.0	25+ F	422
838	Ptrs. Nap.	11348	54.0	25+ F	1605
838	Ptrs. Nap.	11348	53.6	25+ F)	1083
838	Ptrs. Nap.	11348	53.6	25+ F) OK	1957
838	Ptrs. Nap.	11348	53.6	25+ F) EBP	1148
838	Ptrs. Nap.	7626	54.0	25+ F	1967
838	Ptrs. Nap.	7626	54.0	25+ F	1865
838	Ptrs. Nap.	7626	53.6	25+ F)	1606
838	Ptrs. Nap.	7626	53.6	25+ F) OK	1052
838	Ptrs. Nap.	7626	53.6	25+ F) EBP GP—	603
838	Ptrs. Nap.	7626	53.6	25+ F)	1871

146

Monday, October 15, 1917.

147

838	Ptrs. Nap.	7626	53.0	25+ F	1864
838	Ptrs. Nap.	7626	53.0	25+ F	1254
838	Ptrs. Nap.	7626	54.0	25+ F	606
838	Ptrs. Nap.	7626	54.5	25+ F	1789
838	Ptrs. Nap.	7626	54.5	25+ F	1127
838	Ptrs. Nap.	7626	54.3	25+ F	1871

174

Tuesday, October 30, 1917.

175

520	Navy Gasoline	60.8	25+	104-362	95%
511	Gasoline	57.6	25+	124-412	
512	Gasoline	59.3	25+	120-400	

1394 GULF REFINING COMPANY, A CORPORATION, vs.

805	Gasoline	64.4	25+	102-394	
857	Gasoline	58.2	25+		
176					177
Car	Unrefined Naphtha	80.0	20+		926
Car	Unrefined Naphtha	76.2	25+		1127

180 Thursday, November 1, 1917. 181

520	Navy Gasoline	60.8	25+	107-365	96%
511	Gasoline	61.2	25+	135-396	
805	Gasoline	60.8	25+	112-397	
857	Gasoline	57.8	25+	140-396	
838	Painters Naphtha	54.1	25+	182-432	
829	Crude Naphtha	55.4			
805-838	60° Gasoline	43300	60.4	25+	900
805-838	60° Gasoline	43346	60.4	25+	1400
805-838	60° Gasoline	43347	60.4	25+	939
805-838	60° Gasoline	43372	60.5	25+	1216
805-838	60° Gasoline	43373	60.4	25+	1079
838	Painters Naphtha	7626	54.5	25+	629
838	Painters Naphtha	7626	54.3	25+	628
838	Painters Naphtha	7626	54.2	25+	1965
838	Painters Naphtha	7626	54.2	25+	1949
838	Painters Naphtha	7626	54.5	25+	627
838	Painters Naphtha	7626	54.5	25+	626
Car	Unrefined Naphtha	73.6	25+		1366
Car	Unrefined Naphtha	73.5	25+		1978

184 Saturday, November 3, 1917. 185

520	Navy Gasoline	60.7	25+	148-366	97%
511	Gasoline	58.2	25+	165-415	
805	Gasoline	64.1	25+	102-400	
857	Gasoline	57.4	25+	145-411	
838	Painters Naphtha	54.2	25+	190-430	
805-838	60° Gasoline	43381	60.7	25+	Car # 1366

186					187
Car	Unrefined Naphtha	75.2	25+		1774
Car	Unrefined Naphtha	81.3	19+		1981

188 Sunday 11-4-17 189

805	Gasoline	65.0	25+	98-388	
857	Gasoline	57.2	25+	149-397	
838	Painters Naphtha	54.1	25+	189-431	

## UNITED STATES OF AMERICA.

1395

188

189

838	Painters Naptha	7626	54.5	25+	Car # 2105
838	Painters Naptha	7626	54.4	25+	Car # 2101
838	Painters Naptha	7626	54.5	25+	Car # 2116
838	Painters Naptha	7626	54.1	25+	Car # 2112
838	Painters Naptha	7626	54.1	25+	Car # 2113
838	Painters Naptha	7626	54.5	25+	Car # 2104
838	Painters Naptha	11348	54.2	25+	Car # 2106
838	Painters Naptha	11348	54.1	25+	Car # 2102
805-838	60 Gasoline	43381	60.1	25+	Car # 1868

206

Sunday, November 11, 1917.

207

805	Gasoline	66.3	25+	103-390
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206

207

Car	Unrefined Naptha	74.8	25+	Car # 1424
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212

Thursday 11-15-17

213

520	Navy Gasoline	60.8	25+	148	363	97%
511	Gasoline	57.7	25+	138	-	402
512	Gasoline	59.7	25+	132	-	398
805	Gasoline	67.8	25+	105		395
857	Gasoline	58.6	25+	132		401
838	Painters Naptha	54.8	25+	182		418

214

215

805-838	60° Gasoline	43634	60.0	25+	1780
805-838	60° Gasoline	43624	60.3	25+	1983
805-838	60° Gasoline	43335	60.2	25+	1624
805-838	60° Gasoline	43542	60.0	25+	1254
805-838	60° Gasoline	43624	60.1	25+	1978
905-838	60° Gasoline	43544	60.3	25+	1040
805-838	60° Gasoline	43577	60.3	25+	1949
805-838	60° Gasoline	43624	60.3	25+	1864
805-838	60° Gasoline	43439	60.0	25+	437
805-838	60° Gasoline	43624	60.1	25+	1977
838	Painters Naptha	7626	54.8	25+	GP— 603
838	Painters Naptha	7626	54.7	25+	GP— 606
838	Painters Naptha	7626	54.8	25+	GP— 626
838	Painters Naptha	7626	54.7	25+	GP— 627
838	Painters Naptha	7626	54.7	25+	GP— 600

220

Saturday, November 17, 1917.

221

838	Pts. Nap.	11348	55.0	25+	2186
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1396 GULF REFINING COMPANY, A CORPORATION, vs.

838	Pts. Nap.	11348	55.0	25+	2185
838	Pts. Nap.	11348	55.0	25+	2105
838	Pts. Nap.	11348	55.0	25+	2184
838	Pts. Nap.	11348	55.0	25+	2116
838	Pts. Nap.	11348	55.0	25+	2104

248 Tuesday, December 4, 1917. 249

511	Gasoline	57.9	25+	130	422
512	Gasoline	60.0	25+	121	405
520	Gasoline	57.3	25+	154	406
805	Gasoline	64.2	25+	105	406
857	Gasoline	71.3	23+	88	398
838	Painters Naptha	53.9	25+	194	432

250 251

805-838	Ptrs. Nap.	7626	54.2	25+ F	Car # G.P. 602
805-838	Ptrs. Nap.	7626	54.0	25+ F	Car # G.P. 626
805-838	Ptrs. Nap.	7626	54.3	25+ F	Car # G.P. 609
805-838	Ptrs. Nap.	7626	54.0	25+ F	Car # G.P. 600
805-838	Ptrs. Nap.	7626	54.0	25+ F	Car # G.P. 603
805-838	Ptrs. Nap.	7626	54.0	25+ F	Car # G.P. 627

262 Tuesday, December 11, 1917. 263

838	Ptrs. Nap.	7626	54.6	25+	2154
838	Ptrs. Nap.	7626	54.7	25+	2166
838	Ptrs. Nap.	7626	54.7	25+	2167
838	Ptrs. Nap.	7626	54.6	25+	2169
838	Ptrs. Nap.	7626	54.6	25+	2179
838	Ptrs. Nap.	7626	54.8	25+	2181

268 Saturday, December 15, 1916. 269

				Over	Dry
511	Gasoline	57.6	25+	140	412
512	Gasoline	60.0	25+	104	404
520	Gasoline	59.6	25+	111	422
805	Gasoline	62.0	25+	104	402
857	Gasoline	58.2	25+	133	415
838	Painters Naptha	53.5	25+	185	438

306 Saturday, January 5, 1918. 307

838	Painters Nap.	7626	55.2	25+ F	2183
838	Painters Nap.	7626	55.2	25+ F	2175

## UNITED STATES OF AMERICA.

1397

838	Painters Nap.	7626	55.3	25+ F	2109
838	Painters Nap.	7626	55.3	25+ F	2106
838	Painters Nap.	7626	55.4	25+ F	2113
838	Painters Nap.	7626	55.4	25+ F	2178

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316 Thursday, January 10, 1918. 317

805-838	Gasoline	44056	60.4	25+	1451
838	Ptrs Nap	11348	56.1	25+	2173
838	Ptrs Nap	11348	56.0	25+	2154
838	Ptrs Nap	11348	55.7	25+	2107
838	Ptrs Nap	11348	55.6	25+	2150
838	Ptrs Nap	11348	55.7	25+	2148
838	Ptrs Nap	11348	55.7	25+	2192
838	Ptrs Nap	7626	56.2	25+	2152
838	Ptrs Nap	7626	56.2	25+	2161

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338 Thursday, January 24, 1918. 339

512	Gasoline	60.0	25+	140	391
805	Gasoline	59.8	25+	132	406
857	Gasoline	76.5	25+	63	356
838	Ptrs Nap	55.1	25+	180	397

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340 341

805-838	Gasoline	44481	60.8	25+	1445
805-838	Gasoline	44481	60.0	25+	1243
805-838	Gasoline	44481	60.3	25+	1501
805-838	Gasoline	44481	60.3	25+	1354
805-838	Gasoline	44481	60.1	25+	1767
805-838	Gasoline	44703	60.5	25+	1233
805-838	Gasoline	44703	60.3	25+	1613
805-838	Gasoline	44703	60.1	25+	1247
805-838	Gasoline	44703	60.1	25+	1774
805-838	Gasoline	44703	60.5	25+ Hazy	1052

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340 341

838	Ptrs. Nap.	11348	55.6	25+ OK by Mr. EBP	2123
838	Ptrs. Nap.	11348	55.8	25+ OK by Mr. EBP	2100
838	Ptrs. Nap.	11348	55.0	25+ OK by Mr. EBP	2101
838	Ptrs. Nap.	11348	55.8	25+ OK by Mr. EBP	2162
838	Ptrs. Nap.	11348	55.3	25+ OK by Mr. EBP	2146

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344 Saturday, January 26, 1918. 345

511	Gasoline	61.5	25+	110-402
512	Gasoline	60.0	25+	133-396

**1398 GULF REFINING COMPANY, A CORPORATION, vs.**

805	Gasoline	61.7	25+	128-396
857	Gasoline	77.5	22+	79-361
838	Ptrs. Nap.	55.1	25+	202-395
<hr/>				
346				347
838	Ptrs. Nap.	7626	55.0	25+ 2114
838	Ptrs. Nap.	7626	55.1	25+ 2166
838	Ptrs. Nap.	7626	54.9	25+ 2110
838	Ptrs. Nap.	7626	55.0	25+ 2163
905-838	Gasoline	11348	54.8	25+ 2169
905-838	Gasoline	11348	54.9	25+ 2167
905-838	Gasoline	11348	54.9	25+ 2102
905-838	Gasoline	11348	54.7	25+ 2153
905-838	Gasoline	11348	55.0	25+ 2158
905-838	Gasoline	11348	55.1	25+ 2155
905-838	Gasoline	11348	54.8	25+ 2181
905-838	Gasoline	11348	55.0	25+ 2179

**Government's Exhibit 102.**

22	Wednesday, September 19, 1917.			23
520	Navy Gasoline	61.0	25+	138-360 95%
512	Gasoline	57.0	25+	145-395
805	Gasoline	64.5	25+	101-388
857	Gasoline	58.5	25+	138-373
829	Crude Naphtha	53.0		
<hr/>				
24				25
Car	Unrefined Nap.	71.0	25+	1978
Car	Unrefined Nap.	71.6	25+	1786
Car	Unrefined Nap	71.0	25+	1710
<hr/>				
28	Friday, September 21st, 1917.			29
838	Painters Naphtha	7626	53.5	25+ A617
838	Painters Naphtha	7626	53.5	25+ B617
838	Painters Naphtha	7626	54.0	25+ C617
838	Painters Naphtha	7626	53.8	25+ 1710
838	Painters Naphtha	7626	53.7	25+ 1978
838	Painters Naphtha	7626	53.7	25+ 1786
<hr/>				
34	Monday, September 24th, 1917.			35
838	Pts. Nap.	7626	53.3	25+ F Car # 1054
838	Pts. Nap.	7626	53.4	25+ F Car # 1981
838	Pts. Nap.	7626	53.3	25+ F Car # 1852

## 1399

838	Pts. Nap.	7626	53 3	25+ F	Car # 1984
838	Pts. Nap.	7626	53 3	25+ F	Car # 1870
838	Pts. Nap.	7626	53 3	25+ F	Car # 1956
838	Pts. Nap.	7626	53 3	25+ F	Car # 1781
838	Pts. Nap.	7626	53 3	25+ F	Car # 1958
838	Pts. Nap.	7626	53 3	25+ F	Car # 1964
838	Pts. Nap.	7626	53 3	25+ F	Car # 1976

40                      Wednesday, September 26th, 1917.                      41

838	Painters Naphtha 11348	52.9	25+ F)		Car No. 1387
838	Painters Naphtha 11348	52.8	25+ F)		Car No. 1214
838	Painters Naphtha 11348	52.9	25+ )	O.K.	Car No. 1950
838	Painters Naphtha 11348	52.8	25+ )	by	Car No. 1959
838	Painters Naphtha 11348	52.9	25+ )	G.L.P.	Car No. 1220
838	Painters Naphtha 7626	52.8	25+ )		Car No. 605
838	Painters Naphtha 7626	52.8	25+ )		Car No. 604

48 Monday, October 1, 1917. 49

520	Navy Gasoline	61.0	25+	146-365	95%
511	Gasoline	56.9	25+	157-419	
512	Gasoline	57.0	25+	140-424	
805	Gasoline	62.0	25+	124-395	
857	Gasoline	61.7	25+ F	152-388	
838	Painters Naphtha	52.7	25+ F	201-441	
829	Crude Naphtha	53.2			

50 51

805-838 Gasoline	42744	57.4	25+F		Car # 1506
805-838 Gasoline	42903	57.3	25+F		Car # 1135
805-838 Gasoline	42833	57.5	25+F		Car # 1218
805-838 P.M.G.	42859	57.5	25+F		Car # 1052
805-838 P.M.G.	42935	57.4	25+F		Car # 1006
805-838 P.M.G.	42806	57.3	25+F		Car # 1374
838 Painters Nap.	7626	52.1	25+F)		Car # 1967
838 Painters Nap.	7626	53.4	25+F)	OK	Car # 606
838 Painters Nap.	7626	52.0	25+F)	by	Car # 1863
838 Painters Nap.	7626	51.9	25+F)	Mr.	Car # 1871
838 Painters Nap.	7626	52.8	25+F)	G.L.P.	Car # 1118
838 Painters Nap.	7626	52.4	25+F)		Car # 1865
838 Painters Nap.	7626	52.1	25+F)		Car # 1982

50 51

Cars	Unrefined Naphtha	78.5	22+	1071
Cars	Unrefined Naphtha	78.8	21+	G.P. 600

1400 GULF REFINING COMPANY, A CORPORATION, vs.

66	Sunday, October 7, 1917.				67
805	Gasoline	61.8			120-396
857	Gasoline	64.7			110-382

66					67
Car	Unrefined Naphtha	77.7	+22		1983
Car	Unrefined Naphtha	78.4	22+		1624

72	Monday, October 8th, 1917.				73
838	Pts Nap	11348	52 2	25+F	1983
838	Pts Nap	11348	52 3	25+F	1385
838	Pts Nap	11348	52 3	25+F	924
838	Pts Nap	11348	52 3	25+F	1973
838	Pts Nap	11348	52 2	25+F	1977
838	Pts Nap	11348	52 2	25+F	1860
838	Pts Nap	7626	52 2	25+F	2027
838	Pts Nap	7626	52 3	25+F	1736
838	Pts Nap	7626	52 3	25+F	1108
838	Pts Nap	7626	52 4	25+F	1037
838	Pts Nap	7626	52 3	25+F	602
838	Pts Nap	7626	52 4	25+F	1966

88	Sunday, October 14, 1917.				89
520	Navy Gasoline	60.7	25+		
511	Gasoline	57.5	25+		120-415
512	Gasoline	57.5	25+		141-412
805	Gasoline	62.7	+25		110-392
857	Gasoline	63.3	+25		106-388

88					89
Car	Unrefined Naphtha	80.5	25+		1864
Car	Unrefined Naphtha	80.4	24+		1254

108	Monday, October 22nd, 1917.				109
838	Ptrs Naphtha	7626	53.9	25+	1947
838	Ptrs Naphtha	7626	54.0	25+	GP 608
838	Ptrs Naphtha	7626	54.0	25+	1037
838	Ptrs Naphtha	7626	53.7	25+	GP 602
838	Ptrs Naphtha	7626	53.6	25+	1966
838	Ptrs Naphtha	7626	53.9	25+	1954

## 1401

112                      Wednesday, October 24th, 1917.                      113

520	Navy Gasoline	60.8	25+	145-360	97%
511	Gasoline	57.6	25+	118-415	
512	Gasoline	57.5	25+	130-420	
805	Gasoline	63.8	25+	100-387	
857	Gasoline	58.4	25+	137-398	
838	Painters Naphtha	53.9	25+	184-436	

114 115

805-838	60° Gasoline	43218	60.5	25+	1950
805-838	60° Gasoline	43219	60.5	25+	1723
805-838	60° Gasoline	43296	60.7	25+	392
838	Painters Nap.	11348	54.0	25+ F	917
838	Painters Nap.	11348	54.5	25+ F	1606
838	Painters Nap.	11348	54.0	25+ F	1745
838	Painters Nap.	11348	54.0	25+ F	1178
838	Painters Nap.	11348	54.6	25+ F	1108

136                      Friday, November 2, 1917.                      137

520	Navy Gasoline	60.7	25+	149-367	97%
511	Gasoline	59.8	25+	131-398	
512	Gasoline	59.5	25+	130-400	
805	Gasoline	61.8	25+	104-399	
857	Gasoline	57.9	25+	147-400	
829	Crude Naphtha	55.1			

138 139

Cars	Unrefined Naphtha	81.8	22+	2022
Cars	Unrefined Naphtha	81.9	19+	1265

140 Monday, November 5th, 1917. 141

520	Navy Gasoline	60.8	25+	157-365	97%
511	Gasoline	Mt			
512	Gasoline	59.6	25+	121-402	
805	Gasoline	65.2	25+	97-386	
857	Gasoline	57.3	25+	120-415	
838	Painters Naphtha	54.4	25+	191-427	

144 — 145

805-838	60 Gasoline	43453	60.0	25+	Car #	956
805-838	60 Gasoline	43358	60.1	25+		1721
805-838	60 Gasoline	43350	60.3	25+		1966
805-838	60 Gasoline	43334	60.3	25+		1870
805-838	60 Gasoline	43348	60.3	25+		1214

1402 GULF REFINING COMPANY, A CORPORATION, vs.

805-838	60 Gasoline	43334	60.2	25+	1851
805-838	60 Gasoline	43374	60.0	25+	1052
805-838	P.M.G.	43331	57.7	25+	1774
805-838	P.M.G.	43497	57.8	25+	1066
805-838	P.M.G.	43491	57.5	25+	1011
805-838	P.M.G.	43344	57.8	25+	1981
805-838	P.M.G.	43345	57.8	25+	1853
805-838	P.M.G.	43286	57.5	25+	1947
838	Painters Naphtha	11348	54.2	25+	1959
838	Painters Naphtha	11348	54.5	25+	1037
838	Painters Naphtha	11348	54.4	25+	2111
838	Painters Naphtha	7626	54.5	25+	G.P. 602

152 Friday, November 9, 1917. 153

520	Navy Gasoline	60.8	25+	158-365	97%
512	Gasoline	59.6	25+	120-405	
805	Gasoline	65.5	25+	97-364	
857	Gasoline	57.8	+24	148-405	
838	Painters Naphtha	54.5	25+	180-417	
829	Crude Naphtha	56.3			
805-838	60 Gasoline	43375	60.4	25+	Car No. 1970

154 155

Cars	Unrefined Naphtha	75.2	25+	Car # 610A
Cars	Unrefined Naphtha	75.7	25+	Car # 610B
Cars	Unrefined Naphtha	75.8	25+	Car # 610C
Cars	Unrefined Naphtha	75.5	25+	Car # 2027

176 Monday, November 19th, 1917. 177

838	Pts Nap	11348	54.9	25+	2180
838	Pts Nap	11348	54.9	25+	2181
838	Pts Nap	11348	54.8	25+	2187
838	Pts Nap	11348	54.8	25+	2188
838	Pts Nap	11348	54.9	25+	2171
838	Pts Nap	11348	54.9	25+	2154
838	Pts Nap	7626	54.9	25+	1128
838	Pts Nap	7626	54.8	25+	GP 625
838	Pts Nap	7626	54.8	25+	GP 630

178 Wednesday, November 21st, 1917. 179

520	Navy Gasoline	60.6	25+	
511	Gasoline	59.5	25+	122-415
512	Gasoline	59.8	25+	118-408
805	Gasoline	68.1	25+	108-390

## UNITED STATES OF AMERICA.

1403

857	Gasoline	62.3	25+	119-398
838	Pts Naphtha	54.8	25+	190-418

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805-838	60 Gasoline	43506	60.1	25+	1871
805-838	60 Gasoline	43504	60.1	25+	1979
838	Pts Nap	7626	54.6	25+	2183
838	Pts Nap	7626	55.0	25+	2165
838	Pts Nap	7626	55.0	25+	2164

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184 Friday, November 23rd, 1917. 185

511	Gasoline	57.0	25+	130-408
512	Gasoline	60.0	25+	108-409
520	Gasoline	57.4	25+	142-408 96%
805	Gasoline	66.8	25+	110-384
857	Gasoline	62.1	25+	114-399
855	S C Gasoline	60.9	25+	136-346 8.6%
838	Pts Naphtha	54.9	25+	188-398

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805-838	60° Gasoline	43594	60.7	25+	610a
805-838	60° Gasoline	43594	60.7	25+	610B
805-838	60° Gasoline	43594	60.7	25+	610C
805-838	60° Gasoline	43545	60.7	25+	620A
805-838	60° Gasoline	43545	60.6	25+	620B
805-838	60° Gasoline	43545	60.7	25+	620C
805-838	60° Gasoline	43550	60.7	25+	985
838	Pts Nap	7626	55.0	25+	
838	Pts Nap	7626	55.0	25+	
838	Pts Nap	7626	55.0	25+	

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196 Wednesday, November 28, 1917. 197

838	Painters Naphtha	7626	54.0	2169
838	Painters Naphtha	7626	54.1	2167
838	Painters Naphtha	7626	54.3	2192
838	Painters Naphtha	7626	54.3	2117
838	Painters Naphtha	7626	54.3	2121
838	Painters Naphtha	7626	54.2	2166

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Monday, December 3, 1917.

838	Painters Naph	11348	54.2	25+	2120
838	Painters Naph	11348	54.2	25+	2124
838	Painters Naph	11348	54.3	25+	2124
838	Painters Naph	11348	54.3	25+	2123

1406 GULF REFINING COMPANY, A CORPORATION, vs.

312 Sunday, January 13, 1918. 313

805	Gasoline	63.5	25+	
857	Gasoline	76.9	+20F	

312 313

Car	Unrefined Naphtha	83.5	22+	2120
Car	Unrefined Naphtha	83.2	22+	2124

328 Sunday, January 20, 1918. 329

Car	Unrefined Naphtha	84.3	21+	2106
Car	Unrefined Naphtha	84.7	23+	2183

328 329

805	Gasoline	59.7	25+	128-397
857	Gasoline	77.2	+22	94-365

**Government's Exhibit 103.**

**GULF REFINING COMPANY**

Port Arthur, Texas

Report of Tests Made Sunday, February 3, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Radium	825		+ 24		o o
Gasoline	805	59.2	25+F	NG	120 400
Gasoline	857	78.6	23+	NG	90 370
Painters Naphtha	838	54.1	25+	NG	200 398
S. C. Gasoline	814	62.6	25+		126 3.6%
S. C. Gasoline	815	63.3	25+		108 10.3%
Gasoline Dist.	848	61.7	24+F		140 399
Gasoline Dist.	852	58.2	+25 F		139 401
Gasoline Dist.	844	60.3	+25 F		140 419
Gasoline Dist.	855	59.5	25+		179 426
Pts. Naphtha Dist.	849	54.7	22+		256 438
Pts. Naphtha Dist.	810	53.1	17+		205 400
Pts. Naphtha Dist.	843	53.0	25+		
Unrefined Naphtha	Car 2198	83.2	25+	NG	
Unrefined Naphtha	Car 2119	84.1	25+	NG	
Unrefined Naphtha	Car 1603	84.8	25+	NG	
Unrefined Naphtha	Car 2160	85.2	14+	NG	
Unrefined Naphtha	Car 2182	82.9	25+	NG	
Unrefined Naphtha	Car 2108	84.4	25+	NG	
Unrefined Naphtha	Car 2103	82.2	25+	NG	
Unrefined Naphtha	Car 2177	82.7	25+	NG	

Unrefined Naphtha	Car 2189	84.5	25+	NG
Unrefined Naphtha	Car 2115	85.0	25+	NG
Unrefined Naphtha	Car 2172	82.0	25+	NG
Radium	824	43.5	24+	OK
Sunburst	Fillers 519	46.1	18+	OK

## Report of Tests Made February 4th and 5th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Naph	838 2168	54.2	25+	NG	11348
Painters Naph	838 2170	54.2	25+	NG	11348
Painters Naph	838 2172	54.2	25+	NG	11348
Painters Naph	838 2177	54.1	25+	NG	11348
Painters Naph	838 2182	54.1	25+	NG	11348

## Reports of Tests Made February 8, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
					Over Dry
Gasoline	511	60.7	25+	NG	135 416
Gasoline	512	60.5	25+	NG	117 420
Gasoline	805	62.8	25+	NG	115 396
Gasoline	857	76.4	23+	NG	96 363
Pts. Naphtha	383	54.1	25+	NG	185 418
B. Solar	847	50.2	19+	NG	
S. C. Gas. Dist.	817	63.1	25+		116 390
Gasoline Dist.	855	60.3	25+		140 387
Pts. Naphtha Dist.	843	54.7	25+		187 404
Pts. Naphtha Dist.	849	54.0	19+		240 455
Pts. Naphtha Dist.	810	52.8	+21		200 452
Pts. Naphtha Dist.	923	49.1	+16		
Benzol	924	34.2	19+		
Crude Naphtha	813	54.5			
Crude Naphtha	829	55.8			
Special Kero	884	50.1	25+	OK	
Lusterlite	860	Mt			
[1] Elliott	801	44.8	23+	OK	
Radium	842	Mt			
Radium	835	43.9	+24	OK	
Sunburst	85	46.6	+10	OK	
Sunburst	802	46.1	+20	OK	
Sunburst Dist.	803	45.8	+5		
Lusterlite Dist.	858	46.3	+15		
Radium off color	922	43.5	0		
Sunburst SS Stk.	84	Mt			
Sunburst SS Stk.	830	Mt			

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Lusterlite SS Stk.	859	45.4	x		
Water White Stk.	925	42.7			
Standard White Stk.	837	41.2			
Texas WW Stk.	57	34.3			
Unrefined Naphtha	Car 1957	84.0	18+	NG	
Unrefined Naphtha	Car 1072	84.3	19+	NG	
Lusterlite	825	44.8	23+	OK	
Lusterlite	869 1252	44.8	23+F		44945
Lusterlite	860 2122	34.8	23+F		44929
Lusterlite	860 2111	44.9	23+F		44940
Lusterlite	860 2022	44.8	23+F		44858
Lusterlite	860 1603	44.8	23+F		44890
Unrefined Naphtha	Car 1147	61.3			
Unrefined Naphtha	Car 1959	61.2			
Unrefined Naphtha	Car 2025	59.4			

N. J. Wieman, Inspector.

Report of Tests Made February 12, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts Naphtha	805-838	2178	54.3	25+	7626
Pts Naphtha	805-838	2171	54.3	25+	7626
Pts Naphtha	805-838	2175	54.3	25+	7626
Pts Naphtha	805-838	2164	54.1	25+	7626

Report of Tests Made Monday, February 18, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Naph	838 2105	53.7	25+		11348
Painters Naph	838 2104	53.7	25+		11348
Painters Naph	838 2111	53.2	25+		11348
Painters Naph	838 2116	53.7	25+		11348
Painters Naph	838 2120	53.7	25+		11348

Report of Tests Made February 18th and 19th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts Naphtha	838 2188	54.0	25+	NG	11348
Pts Naphtha	838 2158	54.0	25+	NG	11348
Pts Naphtha	838 2161	53.7	25+	NG	11348
Pts Naphtha	838 2186	54.0	25+	NG	11348
Pts Naphtha	838 2185	54.0	25+	NG	11348

## Report of Tests Made February 25, 1918—Monday.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts. Naphtha	838 2163	53.8	25+		7626
Pts. Naphtha	838 2110	53.8	25+		7626
Pts. Naphtha	838 2166	53.8	25+		7626

## Report of Tests Made Wednesday, February 27, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	511	60.0	25+	NG	
Gasoline	512	59.5	25+	NG	
Gasoline	805	62.6	25+	NG	
Gasoline	857	73.2	+ 25	NG	
Painters Naph.	838	53.2	25+	NG	
Crude Naphtha	829	56.6			
Unrefined Naph.	Car 1400	79.6	25+		
Car Ptrs. Naph.	838 2180	53.5	25+	NG	11348
Car Ptrs. Naph.	838 2171	53.4	25+	NG	11348
Car Ptrs. Naph.	838 2118	53.3	25+	NG	11348
Car Ptrs. Naph.	838 2178	53.5	25+	NG	11348
Car Ptrs. Naph.	838 2160	53.5	25+	NG	11348
Car P.M.G.	805-838 1957	57.4	25+	NG	45256

## Reports of Tests Made Thursday, February 28, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts Naphtha	838 2103	53.3	25+F	NG OK by Mr. JWH	7626
Pts Naphtha	838 2198	53.6	25+F	NG OK by Mr. JWH	7626
Pts Naphtha	838 2164	53.6	25+F	NG OK by Mr. JWH	7626

## Reports of Tests Made, Friday, March 1, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Nap	838 2119	53.1	25+	NG	7626
Painters Nap	2148	53.2	25+	NG	7626
Painters Nap	2115	53.3	25+	NG	7626

## Report of Tests Made, Monday, March 4, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Ptrs Naphtha	838 2151	53.7	25+		11348

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Ptrs Naphtha	838	2123	53.6	25+	7626
Ptrs Naphtha	838	2100	53.8	25+	7626
Ptrs Naphtha	838	2155	53.8	25+	7626
Ptrs Naphtha	838	2174	53.7	25+	7626
Ptrs Naphtha	838	2190	53.7	25+	7626
Ptrs Naphtha	838	2156	53.7	25+	7626
Ptrs Naphtha	838	2112	54.0	25+	11348
Ptrs Naphtha	838	2176	53.8	25+	11348

Report of Tests Made, Monday, March 11, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts Naphtha	838 2101	54.1	25+		11348
Pts Naphtha	838 2146	54.0	25+		7626
Pts Naphtha	838 2163	54.1	25+		7626
Pts Naphtha	838 2116	54.1	25+		7626
Pts Naphtha	838 2173	54.5	25+		7626
Pts Naphtha	838 2121	54.0	25+		11348
Pts Naphtha	838 2166	54.4	25+		7626
Pts Naphtha	838 2114	54.6	25+		7626
Pts Naphtha	838 2124	55.2	25+		11348

Report of Tests Made Monday, March 18, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Naphtha	838 GP 403	55.0	24+)	OK'd by	7626
Painters Naphtha	838 GP 521	55.1	24+)	G. L.	7626
Painters Naphtha	838 2153	55.2	24+)	Pritchard	7626

Report of Tests Made Tuesday, March 19, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts Naphtha	2178	55.1	25+		7626
Pts Naphtha	2180	55.5	25+		7626

Report of Tests Made Wednesday, March 20, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Naph.	838 2123	54.8	25+		7626
Painters Naph.	838 2100	55.1	25+		7626
Painters Naph.	838 2147	55.0	25+		7626
Painters Naph.	838 2155	54.6	25+		7626
Painters Naph.	838 2156	54.6	25+		7626

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Painters Naph.	838	2122	54.6	25+	7626
Painters Naph.	838	2190	54.6	25+	7626
Painters Naph.	838	2193	54.4	25+	7626

## Report of Tests Made Thursday, March 21, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Naph.	838 2174	54.6	25+		7626
Painters Naph.	838 2167	54.6	25+		7626

## Report of Tests Made Friday, March 22nd, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Navy Gasoline	520	60.6	25+F	NG	
Navy Gasoline	805	65.8	25+	NG	
Navy Gasoline	857	70.6	25+F	NG	
Painters Naphtha	838	54.0	25+	NG	
Unrefined Naph.	Car 2107	70.1	25+		
Unrefined Naph.	Car 1708	74.6	25+		
Gasoline	805-838 1747	60.1	+25		45443
Gasoline	805-838 1430	60.2	+25		45387
Gasoline	805-838 927	60.2	+25		45401
Gasoline	805-838 1854	60.3	+25		45583
Gasoline	805-838 1786	60.3	+25		45640
Gasoline	805-838 1723	60.2	+25		45589
P.M.G.	805-838 1721	57.0	+25		45460
P.M.G.	805-838 1979	57.2	+25		45459
Painters Naphtha	838 2181	54.0	25+		7626
Painters Naphtha	838 2189	54.0	25+		11348
Painters Naphtha	838 2182	54.0	25+		11348

## Report of Tests Made Saturday, March 23rd, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Navy Gasoline	805	66.5	25+	NG	
Navy Gasoline	857	70.8	+25	NG	
Crude Naphtha	829	56.4			
Pts Naphtha	838	54.1	25+	NG	
Unrefined Naph.	Car 2149	79.8	16+	NG	
Unrefined Naph.	Car 2159	72.0	23+	NG	
Unrefined Naph.	Car 2197	71.1	25+	NG	
Unrefined Naph.	Car 2154	79.0	25+	NG	
Painters Naphtha	838 2150	55.0	25+		11348
Painters Naphtha	838 2168	54.2	25+		11348
Painters Naphtha	838 2177	54.4	25+		11348

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Report of Tests Made Sunday, March 24, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr. Order Nos.
Gasoline	857	70.1	+25	
Unrefined Naphtha	2120	73.8	25+	
Unrefined Naphtha	2116	72.4	25+	

Report of Tests Made Monday, March 25, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Order Dr. Nos.
Car Painters Naphtha	2113	838	54.5 25+	11348
Car Painters Naphtha	2108	838	54.4 25+	11348
Car Painters Naphtha	2116	838	54.2 25+	11348
Car Painters Naphtha	2120	838	54.2 25+	11348
Car Painters Naphtha	2110	838	54.6 25+	11348
Car Painters Naphtha	2161	838	54.7 25+	7626
Car Painters Naphtha	2105	838	54.8 25+	7626
Car Painters Naphtha	2186	838	54.5 25+	7626
Car Painters Naphtha	2162	838	54.5 25+	7626
Car Painters Naphtha	2104	838	54.6 25+	7626
Car Painters Naphtha	2111	838	54.7 25+	7626
Car Gasoline	1934	805-838	60.4 25+	44510
Car Gasoline	1949	805-838	60.7 25+	45404
Car Gasoline	1961	805-838	60.8 25+	45462
Car Gasoline	2022	805-838	60.7 25+	45608
Car Gasoline	2172	805-838	60.8 25+	45643

Report of Tests Made Monday, April 6, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr. Order Nos.
Ptrs. Naptha	923	1421	50.9 24+)	7626
Ptrs. Naptha	823	1375	50.9 24+)	7626
Ptrs. Naptha	923	1531	50.9 24+)	7626
Ptrs. Naptha	923	952	50.9 24+)	7626
Ptrs. Naptha	923	1979	50.9 24+)	7626
Ptrs. Naptha	923	986	50.9 24+)	7626
Ptrs. Naptha	923	1211	52.8 +25 )	11348
Ptrs. Naptha	923	1947	52.8 25+)	11348
Ptrs. Naptha	923	1402	51.0 +25 )	11348
Ptrs. Naptha	923	1954	52.1 +25 )	11348
Ptrs. Naptha	923	1451	52.3 +25 )	G. L. P. 11348
			) per	
			) Mose	
			) Smith	

## Report of Tests Made Monday, April 8th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr. Order Nos.
Ptrs. Naptha	838	2162	54.3 25+	7626
Ptrs. Naptha	838	2176	54.8 25+	7626
Ptrs. Naptha	838	2107	54.8 25+	7626
Ptrs. Naptha	838	1205	54.6 25+	7626
Ptrs. Naptha	838	2104	54.9 25+	7626
Ptrs. Naptha	838	2112	54.2 25+	7626
Ptrs. Naptha	838	1037	54.8 25+	11348
Ptrs. Naptha	838	1858	55.0 25+	11348
Ptrs. Naptha	838	1764	54.8 25+	11348
Ptrs. Naptha	838	1403	54.3 25+	11348

## Report of Tests Made Tuesday, April 9th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr. Order Nos.
Ptrs. Naptha	838	2175	54.9 25+	11348
Ptrs. Naptha		2116	54.9 25+	11348
Ptrs. Naptha		2168	54.8 25+	7626
Ptrs. Naptha		2150	54.8 25+	7626
Ptrs. Naptha		2189	54.8 25+	7626
Ptrs. Naptha		2160	54.8 25+	7626
Ptrs. Naptha		2182	54.7 25+	7626
Ptrs. Naptha		2177	54.8 25+	7626
Ptrs. Naptha	838	2113	55.5 25+)	11348
Ptrs. Naptha	838	2110	54.9 25+)	Haze 11348
			) OK by	
			) Mr. EBP	
Ptrs. Naptha	838	2108	55.3 25+)	11348

## Report of Tests Made Wednesday, April 10, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr. Order Nos.
Ptrs. Naptha	838	521	55.8 25+)	7626
Ptrs. Naptha	838	560	55.6 25+)	OK by 7626
Ptrs. Naptha	838	632	55.7 25+)	Mr. GLP 7626
Ptrs. Naptha	838	2106	55.5 25+)	7626
Ptrs. Naptha	838	2120	55.3 25+	7626

## Report of Tests Made Thursday, April 11th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Order Nos.
Gasoline	805	58.6	25+	
Gasoline	857	73.5	24+	
Crude Naphtha	829	51.2		

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Casoline	805 & 857	Car 1723	60.5	25+	44510
Gasoline	805 & 857	Car 1429	60.0	25+	45693
Gasoline	805 & 857	Car 1712	60.4	25+	45859
Gasoline	805 & 857	Car 1829	60.8	25+	46060
Gasoline	805 & 857	Car 1341	60.0	25+	45884
Gasoline	805 & 857	Car 1953	60.0	25+	45947
Painters Naptha	838	2187	55.7	25+	11348
Painters Naptha	838	2179	55.3	25+	11348
Painters Naptha	838	2183	55.7	25+	11348
Painters Naptha	838	2159	55.5	25+	11348
Unrefined Naptha		406	76.1	25+	
Unrefined Naptha		554	74.7	25+	
Unrefined Naptha		503	75.5	25+	
Unrefined Naptha		436	75.7	25+	
Unrefined Naptha		401	75.5	25+	

Report of Tests Made Friday, April 12th, 1918.

Kind of Oil.	Tank.	Grav.	Color.	Dr.	Order Nos.
Ptrs. Naptha	838	436	55.2	25+)	7626
Ptrs. Naptha	838	2188	55.2	25+)	OK by 11348
Ptrs. Naptha	838	554	54.8	25+)	Mr. EBP 7626
Ptrs. Naptha	838	503	55.1	25+)	7626
Ptrs. Naptha	838	2190	55.4	25+)	11348
Ptrs. Naptha	838	2198	56.0	25+)	OK by 11348
				) Mr. GLP	
Ptrs. Naptha	838	2167	54.8	25+)	OK by 11348
Ptrs. Naptha	838	2151	55.0	25+)	Mr. EBP 11348

Report of Tests Made Monday, April 15th, 1918.

Kind of Oil.	Tank.	Grav.	Color.	Dr.	Order Nos.
Painters Naptha	838	2158	54.9	25+	7626
Painters Naptha	838	2161	54.7	25+	7626
Painters Naptha	838	2155	55.2	25+	7626
Painters Naptha	838	2154	54.7	25+	7626

Report of Tests Made Monday, April 22, 1918.

Kind of Oil.	Tank.	Grav.	Color.	Dr.	Order Nos.
Painters Naptha		2121	54.3	25+	11348
Painters Naptha		2102	54.3	25+	7626
Painters Naptha		2173	54.6	25+	11348
Painters Naptha		2166	54.4	25+	7626

## Report of Tests Made Monday, April 22, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Naptha	2184	54.5	25+		7626
Painters Naptha	2194	54.5	25+		7626
Painters Naptha	2197	54.2	25+		7626
Painters Naptha	2153	54.4	25+		11348
Painters Naptha	2124	54.5	25+		11348
Painters Naptha	2155	54.4	25+		7626
Painters Naptha	2114	54.8	25+		11348

## Report of Tests Made Tuesday, April 23, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	2150	51.4	23+)		11348
Ptrs. Naptha	2177	50.9	23+)		11348
Ptrs. Naptha	2168	50.6	23+)		11348
Ptrs. Naptha	2112	50.6	23+)	Ok'ed	11348
Ptrs. Naptha	2182	50.9	23+)	by GLP	11348
Ptrs. Naptha	2176	50.6	23+)		7626
Ptrs. Naptha	2104	50.6	23+)		7626
Ptrs. Naptha	2162	50.5	23+)	Oked by	7626
Ptrs. Naptha	2107	50.6	23+)	GLP	7626

## Report of Tests Made Friday, April 26, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	62.2	25+		
Gasoline	857	73.8	23+		
Gasoline	838	69.5	23+		
Crude Naphtha	829	56.3			
Unrefined Naph. Car	1277	81.5	20+		
Unrefined Naph. Car	1431	81.6	18+		

## Report of Tests Made Saturday, April 27th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	73.5	23+		
Crude Naphtha	829	54.2			
Unrefined Naph. Car	1979	82.7	19+		
Unrefined Naph. Car	1607	81.8	20+		

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Report of Tests Made Tuesday May 7th, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	823	2122	50.6	24+		7626
Ptrs. Naptha	923	2163	50.6	+24		7626
Ptrs. Naptha	923	2185	50.5	+24		7626

Report of Tests Made Wednesday, May 8th, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Gasoline	805		58.0	25+		
Gasoline	838		71.7	23+		
Gasoline	857		74.1	23+		
Crude Naptha	829		56.3			
Unrefined Naph. Car	1430		74.1	22+		Keifer
Unrefined Naph. Car	1250		73.5	23+		Keifer
Unrefined Naph. Car	2197		73.7	25+		Keifer
Unrefined Naph. Car	2123		72.4	25+		Keifer
Ptrs. Naphtha	923	1943	50.6	25+		7626
Ptrs. Naphtha	923	1264	50.6	+25		7626
Ptrs. Naphtha	923	957	50.7	25+		7626
Ptrs. Naphtha	923	2162	51.0	+25		7626
Ptrs. Naphtha	923	7220	50.6	25+		11348
Ptrs. Naphtha	923	976	50.6	25+		7626
Ptrs. Naphtha	923	1774	50.6	25+		7626
Ptrs. Naphtha	923	1949	50.7	+25		7626
Ptrs. Naphtha	923	2104	50.6	25+		7626
Ptrs. Naphtha	923	1947	50.6	25+		11348
Ptrs. Naphtha	923	2184	51.3	25+		7626
Ptrs. Naphtha	923	1987	54.0	+25		11348
Ptrs. Naphtha	923	1602	54.0	+25		11348
Ptrs. Naphtha	923	1944	53.9	+25		11348
Ptrs. Naphtha	923	2189	52.5	+25		7626
Ptrs. Naphtha	923	2103	53.7	+25		7626
Ptrs. Naphtha	923	1837	50.7	+25		7626
Ptrs. Naphtha	923	2174	53.9	25+		7626
Ptrs. Naphtha	923	2165	52.5	+25		7626
Ptrs. Naphtha	923	2194	51.7	25+		7626
Unrefined Naphtha		1854	72.9	23+		Keifer
Unrefined Naphtha		1816	73.5	25+		Keifer

Report of Tests Made Thursday, May 9th, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Gasoline	805		59.2	25+		

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Gasoline	838		71.6	+24		
Gasoline	857		74.5	23+		
Crude Naphtha	829		53.0			
Car Ptrs. Naph.	923	632	53.6	25+		7626
Car Ptrs. Naph.	923	503	54.0	25+		7626
Car Ptrs. Naph.	923	436	53.8	+25		7626
Car Ptrs. Naph.	923	401	54.0	+25		7626
Unrefined Naph.	Car	1712	82.0	22+	Jenks	
Unrefined Naph.	Car	1335	82.1	20+	Jenks	
Unrefined Naph.	Car	2166	73.4	25+	Keifer	

## Report of Tests Made Wednesday, May 15th, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	923	2153	50.8	25+)		7626
Ptrs. Naptha	923	2105	50.9	25+)		11348
Ptrs. Naptha	923 GP	560	51.0	25+)		7626
Ptrs. Naptha	923	2168	51.0	25+)	OK by	11348
Ptrs. Naptha	923	2112	50.9	25+)	Mr.	11348
Ptrs. Naptha	923	2179	50.9	25+)	GLP	7626
Ptrs. Naptha	923	2176	50.9	25+)		11348
Ptrs. Naptha	923	2183	50.9	25+)		7626

## Report of Tests Made Sunday, May 19, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Gasoline	857		73.9	+24		
Unrefined Naph.	Car	924	79.9	+21		Jenks
Unrefined Naph.	Car	2178	79.8	+18		Jenks

## Report of Tests Made Monday, May 20th, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	923	2124	51.1	25+)		7626
Ptrs. Naptha	923	2161	51.0	25+)		11348
Ptrs. Naptha	923	1810	50.8	25+)		11348
Ptrs. Naptha	923	2191	51.4	25+)	OK by	7626
Ptrs. Naptha	923	1606	50.8	25+)	Mr.	11348
Ptrs. Naptha	923	2158	51.0	25+)	GLP	11348
Ptrs. Naptha	923	2150	51.2	25+)		7626
Ptrs. Naptha	923	2155	51.0	25+)		7626
Ptrs. Naptha	923	2181	51.1	25+)		7626

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Report of Tests Made Tuesday, May 21st, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	923	2194	51.3	25+)		7626
Ptrs. Naptha	923	2103	51.3	25+)	OK by	7626
Ptrs. Naptha	923	2165	51.4	25+)	Mr.	7626
Ptrs. Naptha	923	2184	51.2	25+)	EBP	11348

Report of Tests Made Wednesday, May 22nd, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Gasoline	857		73.6	24 +		
Unrefined Naph. Car	2101		80.9	+19		Jenks
Unrefined Naph. Car	2120		80.8	20 +		Jenks

Report of Tests Made Monday, May 27, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	923	2189	50.3	25 +		7626
Ptrs. Naptha	923	2146	50.8	25 +		11348
Ptrs. Naptha	923	2149	50.9	25 +		7626
Ptrs. Naptha	923	2121	50.6	25 +		11348
Ptrs. Naptha	923	2108	51.0	25 +		11348
Ptrs. Naptha	923	2174	50.4	25 +		7626
Ptrs. Naptha	923	2188	50.3	25 +		11348
Ptrs. Naptha	923	2111	50.3	25 +		11348
Ptrs. Naptha	923	1953	50.3	25 +		7626
Ptrs. Naptha	923	1460	50.3	25 +		7626
Ptrs. Naptha	923	1837	50.3	25 +		7626
Ptrs. Naptha	923	2167	50.3	25 +		7626
Ptrs. Naptha	923	1930	50.3	25 +		7626

Report of Tests Made Tuesday, June 4, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	923	2176	50.6	25 +		7626
Ptrs. Naptha	923	2168	50.5	25 +		7626
Ptrs. Naptha	923	2112	50.5	25 +		7626
Ptrs. Naptha	923	2186	50.6	25 +		7626
Ptrs. Naptha	923	2155	50.5	25 +		7626
Ptrs. Naptha	923	2169	50.6	25 +		7626
Ptrs. Naptha	923	2100	50.5	25 +		7626
Ptrs. Naptha	923	2105	50.5	25 +		7626

## Report of Tests Made Wednesday, June 5th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	58.6	25+		117-407
Gasoline	857	62.6	+25		121-415
Gasoline	838	61.2	25+		115-417
Crude Naph.	829	MT			
Unrefined Naph.	Car 2119	79.5	18+	Jenks	

## Report of Tests Made Thursday, June 6, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	59.3	25+	NG	104-420
Gasoline	857	62.4	+25		104-421
Crude Naphtha	829	MT			
Unrefined Naph.	Car 2171	79.7	18+	Jenks	

## Report of Tests Made Monday, June 10, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Ptrs. Naptha	923 1902	50.6	25+)		7626
Ptrs. Naptha	923 2194	50.4	25+)	OK by	7626
Ptrs. Naptha	923 2164	50.4	+25 )	Mr.	7626
Ptrs. Naptha	923 2103	50.6	+25 )	EBP	7626
Ptrs. Naptha	923 2148	50.4	+25 )		7626
Ptrs. Naptha	923 2165	50.3	24+ F)		7626
Ptrs. Naptha	923 2116	50.6	24+ F)		7626
Ptrs. Naptha	923 1930	50.5	24+ F)		7626
Ptrs. Naptha	923 1395	50.3	24+ F)		11348
Ptrs. Naptha	923 2167	52.0	24+ F)	E.B.P.	11348
Ptrs. Naptha	923 2170	50.4	24+ F)		11348
Ptrs. Naptha	923 2189	52.0	24+ F)		11348
Ptrs. Naptha	923 1956	51.7	24+ F)		11348
Ptrs. Naptha	923 2174	51.9	24+ F)		11348

## Report of Tests Made Thursday, June 13, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	60.9	23+ F	NG	102-390
Gasoline	838	58.1	25+	NG	150-396
Gasoline	857	59.0	+25	NG	130-396
Crude Naphtha	829	52.1			
Unrefined Naph.	Car 2151	87.5	23+		Jenks
Unrefined Naph.	Car 2150	76.6	18+		Jenks

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Report of Tests Made Monday, June 17, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Painters Naph.	923	1305	50.7	25+		7626
Painters Naph.	923	2122	50.4	25+		7626
Painters Naph.	923	2198	50.5	25+		7626
Painters Naph.	923	1321	50.5	25+		7626
Painters Naph.	923	2147	50.6	25+		7626
Painters Naph.	923	4960	50.5	25+		7626
Painters Naph.	923	2192	50.6	25+		11348
Painters Naph.	923	1987	50.4	25+		11348
Painters Naph.	923	1947	50.6	25+		11348
Painters Naph.	923	2182	50.4	25+		11348
Painters Naph.	923	2178	50.7	25+		11348

Report of Tests Made Monday, June 24, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2161	50.8	25+		7626
Cracked Gasoline	923	2111	50.5	25+		7626
Cracked Gasoline	923	1432	50.6	25+		11348
Cracked Gasoline	923	2165	50.5	25+		7626
Cracked Gasoline	923	2116	50.8	25+		11348
Cracked Gasoline	923	2164	50.5	25+		11348
Cracked Gasoline	923	1930	50.6	25+		7626
Cracked Gasoline	923	2114	50.5	25+		7626
Cracked Gasoline	923	1902	50.6	25+		7626
Cracked Gasoline	923	2194	50.6	25+		7626
Cracked Gasoline	923	1233	50.5	25+		11348
Cracked Gasoline	923	993	50.5	25+		11348
Cracked Gasoline	923	2103	50.9	25+		7626

Report of Tests Made Tuesday, June 25, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Gasoline	805		59.1	+25		135-390
Crude Naphtha	829		52.1			
Unrefined Naph.	Car	1228	67.9	23+	Drumright	
Unrefined Naph.	Car	1744	68.3	22+	Drumright	
Unrefined Naph.	Car	1726	67.6	23+	Drumright	
Unrefined Naph.	Car	2199	67.7	23+	Drumright	
Unrefined Naph.	Car	1708	67.8	23+	Drumright	

## Report of Tests Made Friday, June 28, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	61.1	23+		120-388
Crude Naphtha	829	53.3			
Unrefined Naph.	Car	764 79.0	20+	Jenks	

## Report of Tests Made Monday, July 15, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	1327 51.0	25+		7626
Cracked Gasoline	923	1956 51.0	25+		7626
	923	1172 50.5	25+		7626
Cracked Gasoline	923	1245 50.4	25+		7626
Cracked Gasoline	923	2117 50.3	25+		7626
Cracked Gasoline	923	984 50.4	25+		7626
Cracked Gasoline	923	2179 50.5	25+		7626
Cracked Gasoline	923	1607 50.5	25+		7626
Cracked Gasoline	923	1796 50.4	25+		11348
Cracked Gasoline	923	1165 50.3	25+		11348
Cracked Gasoline	923	1606 50.5	25+		11348

## Report of Tests Made Friday, July 26, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	60.7	24+	NG	
Crude Naphtha	829	53.1			
Unrefined Naph.	Car	1116 67.3	20+	Drumright	

## Report of Tests Made Tuesday, July 30, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Painters Naph.	agt.	1870 54.9	+24		7626
Painters Naph.	1-3	1381 55.0	23+		7626
Painters Naph.	1-3	2181 53.7	23+		7626
Painters Naph.	1-3	2006 53.1	23+		11348
Painters Naph.	1-3	1467 54.3	+23		11348
Painters Naph.	1-3	1333 53.5	+23		11348
Painters Naph.	1-3	1163 55.1	23+		11348
Painters Naph.	1-3	1331 53.6	+23		11348
Painters Naph.	1-3	2104 55.0	25+		7626
Painters Naph.	1-3	1999 55.1	25+		7626
Painters Naph.	1-3	1729 55.1	24+		7626
Painters Naph.	1-3	2011 53.9	23+		11348

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Painters Naph.	1-3	1408	54.9	25+	11348
Painters Naph.	1-3	1338	55.1	+24	7626
Painters Naph.	1-3	2012	55.1	+24	7626

Report of Tests Made Monday, August 5, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Painters Naph.	agt. 6	2161	54.4	25+		7626
Painters Naph.	agt.	1606	54.4	25+		7626
Painters Naph.	agt.	2175	54.3	25+		7626
Painters Naph.	agt.	1947	54.3	25+		11348
Painters Naph.	agt.	1444	54.4	25+		11348
Painters Naph.	agt.	1865	54.3	25+		7626
Painters Naph.	agt.	2101	54.3	25+		7626
Painters Naph.	agt.	427	54.2	25+		7626
Painters Naph.	agt.	958	54.3	25+		11348
Painters Naph.	agt.	1327	54.3	25+		11348
Painters Naph.	agt.	1397	54.3	25+		7626
Painters Naph.	agt.	1987	54.1	25+		7626

Report of Tests Made Thursday, August 15, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Painters Naph.		1201	54.5	24+ F)		7626
Painters Naph.		1100	54.4	+24 F)		7626
Painters Naph.		2197	53.8	24+ F) OK by		7626
Painters Naph.		1160	54.5	24+ F) Mr.		11348
Painters Naph.		1278	54.5	24+ F) E.B.P.		7626
Painters Naph.		1470	54.5	24+ F)		7626
Painters Naph.		2118	54.5	24+ F)		7626

Report of Tests Made Saturday, August 23, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Painters Naph.	Agt. #4	2184	52.1	23+		7626
Painters Naph.	Agt.	2167	52.1	23+		7626
Painters Naph.	Agt.	2180	52.0	23+		7626
Painters Naph.	Agt.	1265	52.2	23+		7626
Painters Naph.	Agt.	2147	52.3	23+		7626
Painters Naph.	Agt.	2155	52.1	23+		7626
Painters Naph.	Agt.	2191	52.2	23+		7626
Painters Naph.	Agt.	829	52.4	23+		7626
Painters Naph.	Agt.	1974	52.4	23+		7626

## Report of Tests Made Tuesday, August 27, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Cracked Gas	923	1889	51.0	25+		11348
Cracked Gas	923	2170	51.2	25+		11348
Cracked Gas	923	1611	51.6	25+		11348
Cracked Gas	923	1967	51.6	25+		11348
Cracked Gas	923	1100	51.4	25+		11348
Cracked Gas	923	2149	50.8	25+		11348
Cracked Gas	923	1225	51.8	25+		11348
Cracked Gas	923	2113	51.0	25+		11348
Cracked Gas	923	952	51.0	25+		11348
Cracked Gas	923	1470	51.4	25+		11348
Cracked Gas	923	2197	51.4	25+		11348
Cracked Gas	923	1455	50.8	25+		11348
Cracked Gas	923	1763	51.0	25+		11348
Cracked Gas	923	2103	50.5	25+		11348
Cracked Gas	923	1049	50.7	25+		11348
Cracked Gas	923	1728	50.6	25+		11348

## Report of Tests Made Wednesday, August 28, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2182	51.2	25+		7626
Cracked Gasoline	923	1783	51.5	25+		7626
Cracked Gasoline	923	2008	51.2	25+		7626
Cracked Gasoline	923	1078	50.9	25+		7626
Cracked Gasoline	923	2166	51.0	25+		7626
Cracked Gasoline	923	1837	51.2	25+		7626
Cracked Gasoline	923	1469	50.9	25+		7626
Cracked Gasoline	923	1233	51.2	25+		7626
Cracked Gasoline	923	2025	50.9	25+		7626
Cracked Gasoline	923	1461	51.0	25+		7626
Cracked Gasoline	923	1799	51.2	25+		7626
Cracked Gasoline	923	2158	51.2	25+		7626
Cracked Gasoline	923	1142	51.2	25+		7626
Cracked Gasoline	923	816	51.2	25+		7626
Cracked Gasoline	923	1450	51.6	25+		7626
Cracked Gasoline	923	1467	51.4	25+		7626
Cracked Gasoline	923	935	51.4	25+		7626
Cracked Gasoline	923	932	51.2	25+		7626
Cracked Gasoline	923	984	51.2	25+		7626
Cracked Gasoline	923	1462	51.1	25+		7626
Cracked Gasoline	923	1383	51.2	25+		11348
Cracked Gasoline	923	976	51.2	25+		11348
Cracked Gasoline	923	1991	51.2	25+		11348

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Report of Tests Made Sunday, September 1, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	930	51.6	25+		7626
Cracked Gasoline	923	1237	51.4	25+		7626
Cracked Gasoline	923	1824	51.3	25+		7626
Cracked Gasoline	923	1707	51.5	25+		7626
Cracked Gasoline	923	986	51.3	25+		7626
Cracked Gasoline	923	970	51.3	25+		7626
Cracked Gasoline	923	1237	51.5	25+		7626
Cracked Gasoline	923	1238	51.3	25+		7626
Cracked Gasoline	923	2104	51.0	25+		7626
Cracked Gasoline	923	1128	51.3	25+		7626

Report of Tests Made Sunday, Tuesday, September 3, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2164	51.2	25+		11348
Cracked Gasoline	923	1404	51.1	25+		11348
Cracked Gasoline	923	1962	51.4	25+		11348
Cracked Gasoline	923	1395	51.1	25+		11348
Cracked Gasoline	923	2112	51.0	25+		11348
Cracked Gasoline	923	1244	51.0	25+		11348
Cracked Gasoline	923	1267	51.0	25+		11348
Cracked Gasoline	923	1214	51.1	25+		11348

Report of Tests Made Thursday, September 5, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	1312	51.4	25+		11348
Cracked Gasoline	923	251	51.5	25+		11348
Cracked Gasoline	923	2027	51.5	25+		11348
Cracked Gasoline	923	2102	51.4	25+		11348
Cracked Gasoline	923	1011	50.9	25+		11348
Cracked Gasoline	923	1768	51.1	25+		11348
Cracked Gasoline	923	2193	51.0	25+		11348
Cracked Gasoline	923	1452	51.5	25+		11348
Cracked Gasoline	923	1319	50.8	25+		7626
Cracked Gasoline	923	1861	50.9	25+		7626
Cracked Gasoline	923	1996	50.8	25+		7626
Cracked Gasoline	923	1956	50.8	25+		7626
Cracked Gasoline	923	1401	50.7	25+		7626
Cracked Gasoline	923	745	50.8	25+		7626
Cracked Gasoline	923	1852	50.8	25+		7626
Cracked Gasoline	923	2011	50.9	25+		7626

## UNITED STATES OF AMERICA.

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Cracked Gasoline	923	1072	50.8	25+	7626
Cracked Gasoline	923	972	50.7	25+	7626

## Report of Tests Made Thursday, September 12, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Gasoline	838		58.1	25+		
Gasoline	838	1432	58.0	25+		48961
Gasoline	838	1792	57.7	25+		48943
Gasoline	838	2116	57.7	25+		48945
Unrefined Naph. (top	2119		67.8		Drumright	
Unrefined Naph. (bot.	2119		67.8			
Unrefined Naph. (top	1728		67.9		Drumright	
Unrefined Naph. (bot.	1728		67.9			
Unrefined Naph. (top	1383		67.5		Drumright	
Unrefined Naph. (bot.	1383		67.5			

## Report of Tests Made Saturday, September 14th, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Unrefined Naph. Top	1611		67.3		Drumright	
Unrefined Naph. Bot	1611		66.3			
Unrefined Naph. Top	2160		66.0		Keifer	
Unrefined Naph. Bot	2160		67.2			
Unrefined Naph. Top	1470		66.7		Drumright	
Unrefined Naph. Bot	1470		66.9			
Unrefined Naph. Top	2170		67.4		Drumright	
Unrefined Naph. Bot	2170		66.1			
Unrefined Naph. Top	2197		66.9		Drumright	
Unrefined Naph. Bot	2197		67.0			
Unrefined Naph. Top	1455		66.6		Drumright	
Unrefined Naph. Bot	1455		67.0			
Unrefined Naph. Top	2113		67.3		Drumright	
Unrefined Naph. Bot	2113		67.3			
Unrefined Naph. Top	1225		66.5		Drumright	
Unrefined Naph. Bot	1225		67.1			
Gasoline	838		57.8	25+		

## Report of Tests Made Sunday, September 15, 1918.

Kind of Oil.	Tank.		Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	1824	51.1	25+		7626

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Cracked Gasoline	923	1707	51.4	25+	7626
Cracked Gasoline	923	2163	52.4	23+	7626
Cracked Gasoline	923	1228	50.9	25+	11348
Cracked Gasoline	923	1613	50.9	25+	11348
Cracked Gasoline	923	2174	51.0	25+	11348
Cracked Gasoline	923	1237	51.3	25+	7626
Cracked Gasoline	923	2115	51.6	25+	7626
Cracked Gasoline	923	1142	51.8	23+	7626
Cracked Gasoline	923	1953	50.9	25+	11348
Cracked Gasoline	923	1961	51.0	25+	7626
Cracked Gasoline	923	1774	51.0	25+	7626
Cracked Gasoline	923	1792	50.9	25+	11348
Cracked Gasoline	923	1078	51.0	25+	11348
Cracked Gasoline	923	1865	51.0	25+	11348
Cracked Gasoline	923	1447	51.0	25+	11348
Cracked Gasoline	923	1612	51.0	25+	7626

Report of Tests Made Saturday, September 21, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	57.9	25+		
Unrefined Naph.	Cars 1211	81.8	Jenks		
Unrefined Naph.	Cars 1446	81.7	Jenks		

Report of Tests Made Monday, September 30th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	59.6	25+		
Crude Naphtha	829	54.1			
Unrefined Naph.	251	66.0		Drumright	
Cracked Gasoline	923 2115	50.8			7626
Cracked Gasoline	923 1237	50.6			7626
Cracked Gasoline	923 2011	51.1			7626
Cracked Gasoline	923 2163	50.9			7626
Cracked Gasoline	923 1470	51.0			7626
Cracked Gasoline	923 1612	50.7			7626
Cracked Gasoline	923 1991	51.3			7626
Cracked Gasoline	923 1443	51.3			11348
Cracked Gasoline	923 1858	50.8			7626
Cracked Gasoline	923 1392	51.0			7626
Cracked Gasoline	923 1072	51.5			11348
Cracked Gasoline	923 1273	51.5			11348
Cracked Gasoline	923 1730	51.1			7626

## Report of Tests Made Monday, October 7, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	903	1852	51.0	23+	11348
Cracked Gasoline	903	2199	51.0	23+	12836
Cracked Gasoline	903	923	51.5	23+	7626
Cracked Gasoline	903	2199	51.0	23+	7626
Cracked Gasoline	903	2186	51.4	23+	7626
Cracked Gasoline	903	1975	51.0	23+	11348
Cracked Gasoline	903	1450	51.1	23+	11348
Cracked Gasoline	903	1783	51.1	23+	7626
Cracked Gasoline	903	2110	51.0	25+	11348
Cracked Gasoline	903	1462	51.1	23+	7626
Cracked Gasoline	903	1934	51.0	23+	11348
Cracked Gasoline	923	1934	51.0	23+	11348
Cracked Gasoline	923	1998	51.0	23+	7626
Cracked Gasoline	923	1976	51.0	23+	11348
Cracked Gasoline	923	1233	51.6	23+	7626
Cracked Gasoline	923	2101	51.1	23+	7626
Cracked Gasoline	923	2171	51.0	23+	7626
Cracked Gasoline	923	973	51.0	23+	11348
Cracked Gasoline	923	2152	51.1	23+	12836
Cracked Gasoline	923	1983	51.5	23+	7626
Cracked Gasoline	923	2008	51.1	23+	11348

## Report of Tests Made Friday, October 11th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	62.0	+25		
Crude Naphtha	829	54.0			
Unrefined Naph.	Car	1967	81.2	Jenks	
Unrefined Naph.	Car	1381	80.4	Jenks	

## Report of Tests Made Sunday, October 13, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2116	50.7	23+	7626
Cracked Gasoline	923	1228	51.3	23+	7626
Cracked Gasoline	923	2184	51.3	23+	7626
Cracked Gasoline	923	1749	51.4	23+	7626
Cracked Gasoline	923	2198	51.4	23+	7626
Cracked Gasoline	923	2174	51.7	23+	7626
Cracked Gasoline	923	2115	51.6	23+	11348
Cracked Gasoline	923	2148	51.3	23+	7626
Cracked Gasoline	923	1730	51.6	23+	7626

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Cracked Gasoline	923	2182	51.4	23+	7626
Cracked Gasoline	923	2121	51.3	23+	7626

Report of Tests Made Monday, October 14, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	1915	51.3	23+	11348
Cracked Gasoline	923	1866	51.4	23+	11348
Cracked Gasoline	923	1315	51.3	23+	11348
Cracked Gasoline	923	2169	51.2	23+	11348
Cracked Gasoline	923	1612	51.4	23+	11348
Cracked Gasoline	923	2154	51.3	23+	11348

Report of Tests Made Tuesday, October 15, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	55.4	25+		
Crude Naphtha	829	53.7			
Unrefined Naph.	Car	745	64.6	Drumright	
Unrefined Naph.	Car	2112	64.8	Drumright	
Cracked Gasoline	923	1762	51.4	23+	11348

Report of Tests Made Sunday, October 20, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	2179	51.3	25+		11348
Cracked Gasoline	1998	51.3	25+		11348
Cracked Gasoline	2171	51.6	24+		11348
Cracked Gasoline	1983	51.3	24+		11348
Cracked Gasoline	2186	51.5	24+		11348
Cracked Gasoline	2101	51.3	24+		11348
Cracked Gasoline	2119	51.5	24+		11348
Cracked Gasoline	1707	51.5	24+		11348
Cracked Gasoline	1823	51.6	25+		7626
Cracked Gasoline	1815	51.4	25+		7626
Cracked Gasoline	1982	51.7	25+		7626
Cracked Gasoline	2185	51.3	25+		7626
Cracked Gasoline	2123	51.4	25+		7626
Cracked Gasoline	2146	51.6	25+		7626
Cracked Gasoline	1930	51.8	24+		7626
Cracked Gasoline	1956	51.3	23+		7626
Cracked Gasoline	1857	51.8	25+		7626
Cracked Gasoline	1955	51.8	25+		7626

## Report of Tests Made Friday, October 25, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	2149	51.9	+23		7626
Cracked Gasoline	2222	51.4	+23		7626
Cracked Gasoline	2158	51.3	+23		7626
Cracked Gasoline	2150	51.8	+23		7626
Cracked Gasoline	2209	51.9	+23		7626
Cracked Gasoline	2224	51.3	+23		7626
Cracked Gasoline	2223	51.4	23+		7626
Cracked Gasoline	2117	51.9	+23		7626
Cracked Gasoline	2216	51.3	+23		7626

## Report of Tests Made Tuesday, October 29, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gas.	923 2241	51.3	23+	Filt.	7626
Cracked Gas.	923 2220	51.5	23+	Filt.	11348
Cracked Gas.	923 2219	52.2	23+	Filt.	7626
Cracked Gas.	923 2218	52.2	23+	Filt.	7626
Cracked Gas.	923 2243	51.4	23+	Filt.	7626
Cracked Gas.	923 2118	51.4	23+	Filt.	7626
Cracked Gas.	923 2244	51.4	23+	Filt.	7626
Cracked Gas.	923 2245	51.4	23+	Filt.	7626
Cracked Gas.	923 2191	51.4	23+	Filt.	7626
Cracked Gas.	923 2181	51.4	23+	Filt.	7626
Cracked Gas.	923 2242	51.4	23+	Filt.	7626
Cracked Gas.	923 2221	51.5	23+	Filt.	11348
Cracked Gas.	923 2210	51.3	23+	Filt.	11348
Cracked Gas.	923 2211	51.4	23+	Filt.	11348
Cracked Gas.	923 2229	51.3	23+	Filt.	11348
Cracked Gas.	923 2206	51.3	23+	Filt.	11348
Cracked Gas.	923 2208	51.4	23+	Filt.	11348
Cracked Gas.	923 2205	51.5	23+	Filt.	11348

## Report of Tests Made, Monday, Nov. 4, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923 1726	52.0	23+		7626
Cracked Gasoline	923 1758	52.1	23+		7626
Cracked Gasoline	923 2165	51.9	23+		11348
Cracked Gasoline	923 1852	51.9	23+		11348
Cracked Gasoline	923 2212	51.7	23+		7626
Cracked Gasoline	923 2169	51.6	23+		11348
Cracked Gasoline	923 1861	51.6	23+		11348

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Cracked Gasoline	923	1768	51.5	23+	7626
Cracked Gasoline	923	2215	51.7	23+	11348
Cracked Gasoline	923	2226	52.0	23+	7626
Cracked Gasoline	923	2197	51.8	23+	11348
Cracked Gasoline	923	2202	52.1	23+	7626
Cracked Gasoline	923	2159	51.7	23+	11348
Cracked Gasoline	923	1823	52.0	23+	11348
Cracked Gasoline	923	1793	51.9	23+	7626
Cracked Gasoline	923	1827	51.9	23+	7626
Cracked Gasoline	923	2213	52.2	23+	7626
Cracked Gasoline	923	2214	52.4	23+	7626

Report of Tests Made Tuesday, November 12th, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	58.2	21+	NG	
Gasoline	857	58.7	25+	NG	
Unrefined Naphtha	1707	64.3		Drumright	
Unrefined Naphtha	2110	83.4		Jenks	
Unrefined Naphtha	2249	83.5		Jenks	

Report of Tests Made Thursday, November 14, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2224	52.1	23+	7626
Cracked Gasoline	923	2119	52.0	23+	11348
Cracked Gasoline	923	2157	52.1	23+	7626
Cracked Gasoline	923	2150	52.0	23+	11348
Cracked Gasoline	923	1998	52.0	23+	11348
Cracked Gasoline	923	2209	52.0	23+	7626
Cracked Gasoline	923	1961	52.1	23+	7626
Cracked Gasoline	923	1987	52.3	23+	7626
Cracked Gasoline	923	1707	52.1	23+	11348
Cracked Gasoline	923	2158	52.0	23+	11348
Cracked Gasoline	923	2113	52.0	23+	7626
Cracked Gasoline	923	2179	52.0	23+	11348
Cracked Gasoline	923	2216	52.0	23+	7626
Cracked Gasoline	923	2104	52.1	23+	11348
Cracked Gasoline	923	2217	52.7	23+	7626

Report of Tests Made Monday, November 18, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2193	52.0		7626

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Cracked Gasoline	923	2021	52.0	7626
Cracked Gasoline	923	2220	52.0	7626
Cracked Gasoline	923	2247	52.0	7626
Cracked Gasoline	923	2011	52.0	7626
Cracked Gasoline	923	2244	52.0	11348
Cracked Gasoline	923	1726	52.0	11348
Cracked Gasoline	923	2175	52.0	7626
Cracked Gasoline	923	2006	52.0	11348
Cracked Gasoline	923	1713	52.0	11348
Cracked Gasoline	923	2211	52.0	11348
Cracked Gasoline	923	2248	52.0	7626
Cracked Gasoline	923	1988	52.0	11348
Cracked Gasoline	923	1944	52.0	7626
Cracked Gasoline	923	2210	52.0	7626
Cracked Gasoline	923	1947	52.0	11348

## Report of Tests Made Tuesday, November 26, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2224	52.0	23+	7626
Cracked Gasoline	923	2215	52.5	23+	7626
Cracked Gasoline	923	2198	52.4	23+	7626
Cracked Gasoline	923	2105	52.1	23+	7626
Cracked Gasoline	923	1987	51.9	23+	7626
Cracked Gasoline	923	1718	52.0	23+	11348
Cracked Gasoline	923	1961	52.0	23+	7626
Cracked Gasoline	923	1837	52.0	23+	11348
Cracked Gasoline	923	2103	52.0	23+	7626
Cracked Gasoline	923	2222	52.0	23+	7626
Cracked Gasoline	923	1963	52.0	23+	11348
Cracked Gasoline	923	2108	52.0	23+	7626
Cracked Gasoline	923	2112	52.0	23+	11348
Cracked Gasoline	923	2209	52.0	23+	7626

## Report of Tests Made Wednesday, November 27, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2249	52.2	+24	11348
Cracked Gasoline	923	2157	51.9	+24	11348
Cracked Gasoline	923	1819	52.2	+24	11348
Cracked Gasoline	923	2186	52.2	+24	11348
Cracked Gasoline	923	2187	52.3	+24	11348

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Report of Tests Made December 2, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	1948	52.1	23+	11348
Cracked Gasoline	923	2248	52.1	23+	7626
Cracked Gasoline	923	2114	52.1	23+	7626
Cracked Gasoline	923	2247	52.0	23+	7626
Cracked Gasoline	923	2220	52.0	23+	7626
Cracked Gasoline	923	2196	52.0	23+	7626
Cracked Gasoline	923	2115	52.1	23+	7626
Cracked Gasoline	923	2178	52.1	23+	7626
Cracked Gasoline	923	1943	52.0	23+	11348
Cracked Gasoline	923	1753	52.1	23+	7626
Cracked Gasoline	923	2110	52.0	23+	11348
Cracked Gasoline	923	2193	52.1	23+	7626
Cracked Gasoline	923	2011	52.0	23+	7626
Cracked Gasoline	923	2185	52.4	23+	11348
Cracked Gasoline	923	1797	52.5	23+	11348
Cracked Gasoline	923	2102	52.0	23+	11348
Cracked Gasoline	923	1991	52.1	23+	11348

Report of Tests Made Thursday, December 12, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	58.0	25+		
Crude Naphtha	829	57.0			
Unrefined Naph.	2173	67.6	Drumright		
Unrefined Naph.	2183	67.3	Drumright		

Report of Tests Made Monday, December 16, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	63.1	25+		
Gasoline	857	57.9	25+		

Report of Tests Made Tuesday December 17, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2190	52.3	25+	11348
Cracked Gasoline	923	1889	52.3	25+	11348
Cracked Gasoline	923	2112	52.4	25+	11348
Cracked Gasoline	923	1968	52.4	25+	11348
Cracked Gasoline	923	2116	52.3	25+	11348

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Cracked Gasoline	923	2166	52.8	25+	11348
Cracked Gasoline	923	2133	52.3	25+	11348
Cracked Gasoline	923	2146	52.5	25+	11348

## Report of Tests Made Wednesday, December 18, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	58.7	25+		
Crude Naphtha	829	54.4			
Unrefined Naphtha	2157	68.4		Drumright	
Unrefined Naphtha	1976	68.0		Drumright	

## Report of Tests Made Friday, December 20, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	59.1	25+		
Crude Naph.	829	52.4			
Unrefined Naph.	2194	69.2		Drumright	
Gasoline	857	2121	58.9	25+ over at 112°	50551
Gasoline	2117	58.9	221°	32.5%	50554
Gasoline	2209	58.9	275°	61.0%	50553
Gasoline	1852	58.7	356°	89.0%	50562
Gasoline	1976	58.8	Dry	408%	50560
Gasoline	2185	58.7	Rec	95.5%	50549

## Report of Tests Made Monday, December 23, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cracked Gasoline	923	2163	52.5	23+	11348
Cracked Gasoline	923	2204	52.6	23+	11348
Cracked Gasoline	923	2106	52.4	23+	11348
Cracked Gasoline	923	1861		23+	7626
Cracked Gasoline	923	2246		23+	7626
Hy. Ptrs. Naph.	923	2168	52.5	23+	7626
Hy. Ptrs. Naph.	923	2167	52.5	23+	7626
Ptrs. Naph.	923	2246	52.5	23+	7626
Ptrs. Naph.	923	2170	52.5	23+	7626
Ptrs. Naph.	923	2221	52.5	23+	7626
Ptrs. Naph.	923	1861	52.5	23+	7626
Cracked Gasoline	923	2167		23+	7626
Cracked Gasoline	923	2168		23+	7626
Cracked Gasoline	923	2221		23+	7626

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Cracked Gasoline	923	2170		23+	7626
Cracked Gasoline	923	2155	52.4	23+	7626
Cracked Gasoline	923	2133	52.3	23+	7626
Cracked Gasoline	923	2192	52.3	23+	7626
Cracked Gasoline	923	1850	52.4	23+	7626
Cracked Gasoline	923	2169	53.6	23+	11348
Cracked Gasoline	923	1796	53.0	23+	11348
Cracked Gasoline	923	1749	52.3	23+	11348
Cracked Gasoline	923	2100	52.5	23+	11348
Cracked Gasoline	923	2188	52.3	23+	11348

Report of Tests Made Saturday, December 28, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	59.3	25+		
Unrefined Naph.	Car	1956	69.4	Drumright	

Report of Tests Made Monday, December 30, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Unrefined Naph.	Cars	1762	70.2	Drumright	
Unrefined Naph.	Cars	2207	70.1	Drumright	
Hy. Pts. Naph.	923	218	53.0	23+	11348
Hy. Pts. Naph.	923	1865	52.4	23+	7626
Hy. Pts. Naph.	923	1744	52.5	23+	7626
Hy. Pts. Naph.	923	2119	53.0	23+	7626
Hy. Pts. Naph.	923	2164	52.4	23+	7626
Hy. Pts. Naph.	923	2239	52.6	23+	7626
Hy. Pts. Naph.	923	2222	52.9	23+	7626
Hy. Pts. Naph.	923	2158	52.6	23+	7626
Hy. Pts. Naph.	923	2172	52.5	23+	11348
Hy. Pts. Naph.	923	2243	52.6	23+	11348
Hy. Pts. Naph.	923	1956	52.8	23+	11348
Hy. Pts. Naph.	923	2124	52.6	23+	7626
Hy. Pts. Naph.	923	1866	52.9	23+	7626

Report of Tests Made Tuesday, December 31, 1918.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	61.8	+25		
Hy. Pts. Naph.	923	2184	53.0	23+ F	11348
Hy. Pts. Naph.	923	2109	53.2	23+ F	11348
Hy. Pts. Naph.	923	1998	52.3	23+ F	11348
Hy. Pts. Naph.	923	2240	52.2	23+ F	11348

## Report of Tests Made January 1, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Unrefined Naphtha	1946	86.0		Jenks	
Unrefined Naphtha	2245	85.0		Jenks	

## Report of Tests Made Monday, January 6th, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Hy. Ptrs. Naph.	923	2113	51.9	23+ F	11348
Hy. Ptrs. Naph.	923	2120	52.2	23+ F	11348
Hy. Ptrs. Naph.	923	1850	52.3	23+ F	11348
Hy. Ptrs. Naph.	923	2203	53.3	23+ F	11348
Hy. Ptrs. Naph.	923	1948	52.4	23+ F	11348
Hy. Ptrs. Naph.	923	2216	52.1	23+ F	11348
Hy. Ptrs. Naph.	923	1955	52.1	23+ F	11348
Hy. Ptrs. Naph.	923	2224	52.1	23+ F	7626
Hy. Ptrs. Naph.	923	2198	52.0	23+ F	7626
Hy. Ptrs. Naph.	923	2105	52.1	23+ F	7626

## Report of Tests Made Monday, January 13, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	61.0	25+		
Crude Naphtha	829	60.2			
Unrefined Naphtha	2209	69.9		Drumright	

## Report of Tests Made Tuesday, January 14, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	61.0	25+		
Crude Naphtha	829	40.8			

## Report of Tests Made Wednesday, January 15, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	61.5	25+		
Gasoline	838	62.4	25+		
Gasoline	857	61.3	25+		

## Report of Tests Made Thursday, January 16, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	805	61.6	25+		
Crude Naphtha	829	61.0			
Unrefined Naph.	1936	85.8	Jenks		
Car Cracked Gas.	923 315	53.5	25+		7626
Car Cracked Gas.	923 2118	53.0	25+		7626
Car Cracked Gas.	923 2225	53.1	25+		11348
Car Cracked Gas.	923 2246	52.0	25+		11348
Car Cracked Gas.	923 2171	53.3	25+		11348
Car Cracked Gas.	923 2185	53.0	25+		11348
Car Cracked Gas.	923 2220	53.2	25+		11348
Car Cracked Gas.	923 1813	53.2	25+		11348
Car Cracked Gas.	923 1549	53.0	25+		11348
Car Cracked Gas.	923 2226	53.2	25+		7626

## Report of Tests Made Friday, January 17, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	61.5	25+		
Crude Naphtha	829	60.6			
Unfinished Naph.	2248	60.9		Drumright	
Unfinished Naph.	1956	68.8		Drumright	
Unfinished Naph.	2196	68.5		Drumright	
Unfinished Naph.	2172	68.5		Drumright	
Unfinished Naph.	2178	70.6		Drumright	
Cracked Gasoline	923 1651	54.6	25+		7626
Cracked Gasoline	923 1644	54.3	25+		7626
Cracked Gasoline	923 1614	54.3	25+		7626
Cracked Gasoline	923 1721	54.3	25+		7626

## Report of Tests Made Saturday, January 18, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts. Naptha	923 2196	54.4	25+		7626
Pts. Naptha	923 2172	54.5	25+		7626
Pts. Naptha	923 2248	54.5	25+		7626
Pts. Naptha	923 2178	54.5	25+		7626

## Report of Tests Made Tuesday, January 21, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Crack. Gasoline	923 2204	51.8	23+ F		11348
Crack. Gasoline	923 2194	51.9	23+ F		11348

Crack. Gasoline	923	1749	51.8	23+ F	11348
Crack. Gasoline	923	1852	52.0	23+ F	11348
Crack. Gasoline	923	1889	52.1	23+ F	11348
Crack. Gasoline	923	2198	52.0	23+ F	11348
Crack. Gasoline	923	2001	51.8	23+ F	11348
Crack. Gasoline	923	2224	52.3	23+ F	11348
Crack. Gasoline	923	1987	52.0	23+ F	11348

## Report of Tests Made Saturday, January 25, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Heavy painters	402	53.1	23+ F		7626
Heavy painters	380	53.0	23+ F		7626
Heavy painters	388	53.0	23+ F		7626
Heavy painters	368	52.9	23+ F		7626
Heavy painters	378	53.9	23+ F		7626
Heavy painters	355	53.1	23+ F		7626
Heavy painters	1836	53.9	23+ F		7626
Heavy painters	330	53.0	23+ F		7626
Heavy painters	359	53.1	23+ F		7626

## Report of Tests Made Tuesday, January 28, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Hy. Pts. Naphtha	923	GP422	52.4	+23f )	7626
Hy. Pts. Naphtha	923	GP427	52.4	23+f )	7626
Hy. Pts. Naphtha	923	GP354	52.5	+23f )	7626
Hy. Pts. Naphtha	923	1902	52.4	+23f )	O. K. 7626
Hy. Pts. Naphtha	923	2021	52.1	+23f )	by 7626
Hy. Pts. Naphtha	923	2157	52.4	23+f )	Mr. 7626
Hy. Pts. Naphtha	923	GP400	52.3	+23f )	R. J. M. 7626
Hy. Pts. Naphtha	923	GP394	52.2	23+f )	7626
Hy. Pts. Naphtha	923	GP336	52.3	+23f )	7626
Hy. Pts. Naphtha	923	2190	51.9	+23f )	7626

## Report of Tests Made Wednesday, January 29, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	62.5	25+ F		
Crude Naphtha	829	57.6			
Cars Heavy Ptrs.	2176	52.8	23+		11348
Cars Heavy Ptrs.	2211	52.9	23+		11348
Cars Heavy Ptrs.	2210	52.8	23+		11348
Cars Heavy Ptrs.	1955	53.0	23+		11348

1438 GULF REFINING COMPANY, A CORPORATION, vs.

Cars Heavy Ptrs.	1944	53.1	23+	11348
Cars Heavy Ptrs.	2123	53.0	23+	11348
Cars Heavy Ptrs.	2237	53.0	23+	11348

Report of Tests Made Thursday, January 30th, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	62.5	25+		
Unrefined Naphtha	2230	86.4		Jenks	
Unrefined Naphtha	2200	83.7		Jenks	
Crude Naphtha	829	57.3			
Hy. Ptrs. Naph.	923	2218	53.2	23+	7626
Hy. Ptrs. Naph.	923	2242	53.1	23+	11348

Report of Tests Made January 31, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Pts. Naphtha	838	56.2	+24		
Crude Naphtha	829	57.2			

Report of Tests Made Saturday, February 1, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Unrefined Naphtha	2171	70.3		Drumright	
Unrefined Naphtha	1549	70.9		Drumright	
Unrefined Naphtha	2185	70.7		Drumright	

Report of Tests Made Monday, February 3, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Hvy. Pts. Naph.	923	418	52.8	23+ F	7626
Hvy. Pts. Naph.	923	399	53.2	23+ F	7626
Hvy. Pts. Naph.	923	436	53.2	23+ F	7626
Hvy. Pts. Naph.	923	457	53.3	23+ F	7626
Hvy. Pts. Naph.	923	315	53.1	23+ F	7626
Hvy. Pts. Naph.	923	1005	52.7	23+ F	7626
Nvy. Pts. Naph.	923	1721	52.8	23+ F	7626
Hvy. Pts. Naph.	923	401	52.8	23+ F	7626
Hvy. Pts. Naph.	923	2226	52.8	23+ F	11348
Hvy. Pts. Naph.	923	1796	52.8	23+ F	11348
Hvy. Pts. Naph.	923	2171	52.8	23+ F	11348
Hvy. Pts. Naph.	923	2006	52.8	23+ F	11348

Hvy. Pts. Naph.	923	2227	52.7	23+ F	11348
Hvy. Pts. Naph.	923	1799	52.7	23+ F	11348
Hvy. Pts. Naph.	923	2246	52.7	23+ F	11348
Hvy. Pts. Naph.	923	2185	52.8	23+ F	11348

## Report of Tests Made Sunday, February 9, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Hy. Pt. Naph.	923	394	52.5	23+ F	7626
Hy. Pt. Naph.	923	2238	52.6	23+ F	7626
Hy. Pt. Naph.	923	2110	52.6	23+ F	7626
Hy. Pt. Naph.	923	1790	52.8	23+ F	7626

## Report of Tests Made Monday, February 10, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Hy. Pts. Naph.	923	1963	53.0	23+	7626
Hy. Pts. Naph.	923	559	53.1	+23	7626
Hy. Pts. Naph.	923	427	52.9	23+	7626

## Report of Tests Made Wednesday, February 12, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	838	67.4	25+		
Crude Naphtha	829	54.6			
Unrefined Naphtha	2207	83.5		Jenks	
Unrefined Naphtha	2240	84.1		Jenks	

## Report of Tests Made Saturday, February 15, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cars Pts. Naphtha	Agt. 5	2190	55.0	23+	11348
Cars Pts. Naphtha	Agt. 5	8059	55.0	+23	7626
Cars Pts. Naphtha	Agt. 5	1960	55.0	25+	11348
Pts. Naphtha	Agt. 5	1965	55.0	25+ F	11348
Pts. Naphtha	Agt. 5	2188	54.7	25+	11348
Pts. Naphtha	Agt. 5	1749	54.5	25+	11348
Pts. Naphtha	Agt. 5	1644	54.9	25+	7626
Pts. Naphtha	Agt. 5	2011	55.0	25+	11348
Pts. Naphtha		1651	54.8	25+	7626
Pts. Naphtha		2158	54.8	25+	11348
Pts. Naphtha		1969	54.9	25+	11348

## Report of Tests Made Monday, February 17, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Cars Hvy. Pts. Naph.	Agt. #6	2229 54.0	+25 F		11348
Cars Hvy. Pts. Naph.	Agt. #6	418 53.9	25+ F		7626
Cars Hvy. Pts. Naph.	Agt. #6	8070 53.9	25+ F		7626
Cars Hvy. Pts. Naph.	Agt. #6	2160 53.9	25+ F		11348
Cars Hvy. Pts. Naph.	Agt. #6	315 53.9	25+ F		7626
Cars Hvy. Pts. Naph.	Agt. #6	2183 54.0	25+ F		11348
Cars Hvy. Pts. Naph.	Agt. #6	2154 54.2	25+ F		11348
Cars Hvy. Pts. Naph.	Agt. #6	2242 54.1	25+ F		11348

## Report of Tests Made Tuesday, February 18, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Hvy. Pts. Naphtha	Agt. #6	436 53.0	25+		7626
Hvy. Pts. Naphtha	Agt. #6	307 53.0	25+		7626
Hvy. Pts. Naphtha	Agt. #6	2226 53.0	25+		7626
Hvy. Pts. Naphtha	Agt. #6	2210 53.4	25+		11348
Hvy. Pts. Naphtha	Agt. #6	1614 53.0	25+ F		7626
Hvy. Pts. Naphtha	Agt. #6	2246 52.9	25+		7626
Hvy. Pts. Naphtha	Agt. #6	2171 52.9	25+		11348

## Report of Tests Made Saturday, February 21st, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	Mty			
Gasoline	805	64.7	25+ F		
Crude Naphtha	829	58.3	25+ F		
Car Unrefined Naph.	2155	85.0		Jenks	
Car Unrefined Naph.	401	85.0		Jenks	
Ptrs. Naphtha	Agt. 5 2177	54.7	+25-F		7626

## Report of Tests Made Monday, February 24, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Car Pts. Naphtha	Agt. 6	2026 54.2	25+		11348
Car Pts. Naphtha	Agt. 6	2122 54.3	25+		11348
Car Pts. Naphtha	Agt. 6	1813 54.2	25+		7626
Car Pts. Naphtha	Agt. 6	2180 54.2	25+		11348
Car Pts. Naphtha	Agt. 6	2100 54.2	25+		11348
Car Pts. Naphtha	Agt. 6	2203 54.3	25+		11348
Car Pts. Naphtha	Agt. 6	2238 54.2	25+		11348

## UNITED STATES OF AMERICA.

1441

Car Pts. Naphtha	Agt. 6	1963	54.1	25+	11348
Car Pts. Naphtha	Agt. 6	1762	54.3	25+	11348
Car Pts. Naphtha	Agt. 6	1790	54.2	25+	7626
Car Pts. Naphtha	Agt. 6	388	54.2	25+	7626
Car Pts. Naphtha	Agt. 6	359	54.1	25+	7626
Car Pts. Naphtha	Agt. 6	368	54.2	25+	7626
Car Pts. Naphtha	Agt. 6	427	54.2	25+	7626
Car Pts. Naphtha	Agt. 6	394	54.2	25+	7626
Car Pts. Naphtha	Agt. 6	328	54.2	25+	7626
Car Pts. Naphtha	Agt. 6	8010	54.3	25+	7626
Car Pts. Naphtha	Agt. 6	2230	54.2	25+	7626

## Report of Tests Made March 4, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Order Dr. Nos.
Car Pts. Naphtha	Agt. 6	8041	54.6	25+ 7626
Car Pts. Naphtha	Agt. 6	2243	54.6	25+ 11348
Car Pts. Naphtha	Agt. 6	418	54.5	25+ 7626
Car Pts. Naphtha	Agt. 6	8070	54.6	25+ F 7626
Car Pts. Naphtha	Agt. 6	2228	54.6	25+ 11348
Car Pts. Naphtha	Agt. 6	2189	54.6	25+ 11348
Car Pts. Naphtha	Agt. 6	315	54.6	25+ F 7626
Car Pts. Naphtha	Agt. 6	2245		11348
Car Pts. Naphtha	Agt. 6	1749	54.5	25+ 11348
Car Pts. Naphtha	Agt. 6	1960	54.6	25+ 11348
Car Pts. Naphtha	Agt. 6	2222	54.6	25+ 11348
Car Pts. Naphtha	Agt. 6	1948	54.5	25+ 11348
Car Pts. Naphtha	Agt. 6	8051	54.5	25+ 7626
Car Pts. Naphtha	Agt. 6	8045	54.6	25+ 7626
Car Pts. Naphtha	Agt. 6	8023	54.6	25+ 7626
Car Pts. Naphtha	Agt. 6	8061	54.3	25+ 7626
Car Pts. Naphtha	Agt. 6	8068	54.1	25+ 7626
Car Pts. Naphtha	Agt. 6	3031		7626

## Report of Tests Made Saturday, March 15, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Order Dr. Nos.
Pts. Naphtha	Agt. 5	8083	53.7	25+ 7626
Pts. Naphtha	Agt. 5	1865	53.8	25+ 11348
Pts. Naphtha	Agt. 5	1975	54.0	25+ 11348
Pts. Naphtha	Agt. 5	1951	53.8	25+ 11348
Pts. Naphtha	Agt. 5	1991	53.6	25+ 11348

1442 GULF REFINING COMPANY, A CORPORATION, vs.

Report of Tests Made Monday, March 17, 1919.

Kind of Oil.	Tank.	Gravity.	Color.	Dr.	Order Nos.
Gasoline	857	68.2	25+		
Crude Naphtha	829	59.8			
Unrefined Naph.	2185	85.0		Jenks	
Unrefined Naph.	2223	84.0		Jenks	

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**Government's Exhibit 110.**

12-11-16

511 B. H. Gasoline Over @ 134 Dry @ 383  
 520 B. H. Gasoline Over @ 136 Dry @ 385  
 857 Gasoline Over @ 133 Dry @ 376  
 805 Gasoline Over @ 105 Dry @ 378

12-15-16

511 B. H. Gasoline Over @ 135 Dry @ 385  
 520 B. H. Gasoline Over @ 132 Dry @ 380  
 805 Gasoline Over @ 112 Dry @ 380  
 857 Gasoline Over @ 140 Dry @ 371

12-19-16

511 B. H. Gasoline Over @ 133 Dry @ 392  
 520 B. H. Gasoline Over @ 128 Dry @ 383  
 805 Gasoline Over @ 129 Dry @ 381  
 857 Gasoline Over @ 134 Dry @ 380

12-29-16

3 Cars Kiefer Over @ 75 Dry @ 361

1-1-17

1 Car Kiefer Over @ 76 Dry @ 350

1-3-17

520 B. H. Gasoline Over @ 139 Dry @ 383  
 805 Gasoline Over @ 117 Dry @ 360  
 857 Gasoline Over @ 140 Dry @ 372

1-4-17

6 Cars Kiefer Over @ 72 Dry @ 372

1-9-17

10 Cars Kiefer Over @ 81 Dry @ 354

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**Government's Exhibit 111.**

1-11-17

511 B. H. Gasoline Over @ 130 Dry @ 393  
805 Gasoline Over @ 103 Dry @ 392  
857 Gasoline Over @ 120 Dry @ 374  
Avg Kiefer Cars Over @ 71 Dry @ 363

1-14-17

Avg Kiefer Cars Over @ 71 Dry @ 355

1-16-17

511 B. H. Gasoline Over @ 118 Dry @ 369  
805 Gasoline Over @ 129 Dry @ 385  
857 Gasoline Over @ 130 Dry @ 370

1-19-16

511 B. H. Gasoline Over @ 128 Dry @ 380  
805 Gasoline Over @ 99 Dry @ 375  
857 Gasoline Over @ 126 Dry @ 355

1-20-16

Avg Cars of Kiefer Over @ 84 Dry @ 335

1-23-17

Avg 3 Kiefer Cars Over @ 85 Dry @ 355

1-25-17

511 B. H. Gasoline Over @ 112 Dry @ 375  
520 B. H. Gasoline Over @ 118 Dry @ 382  
805 Gasoline Over @ 113 Dry @ 357  
Avg Kiefer Cars 9 Over @ 60 Dry @ 355

1-28-17

Avg 7 Kiefer Cars Over @ 82 Dry @ 347

1-29-17

805 Gasoline Over @ 106 Dry @ 370  
857 Gasoline Dist Over @ 140 Dry @ 369

1-30-17

Agt. #1 Navy Gasoline Over @ 118 Dry @ 347  
511 B. H. Gasoline Over @ 118 Dry @ 378  
520 B. H. Gasoline Over @ 115 Dry @ 377  
805 Gasoline Over @ 139 Dry @ 378  
#1225 Kiefer Over @ 90 Dry @ 362

2-1-17

511 B. H. Gasoline Over @ 120 Dry @ 380

1444 GULF REFINING COMPANY, A CORPORATION, *vs.*

805 Gasoline Over @ 126 Dry @ 374  
Avg Kiefer Cars Over @ 82 Dry @ 346

2-4-17

855 64 Gasoline Over @ 119 Over @ 212—46.5%  
857 Gasoline Over @ 124 Over @ 212—41% Over @ 230—  
57.5% Dry @ 348 Recovery—96%

2-6-17

Avg Kiefer Cars Over @ 94 Dry @ 366  
805 Gasoline Over @ 106 Dry @ 377  
857 64 Gasoline Over @ 125 212—43.5% ; 230—61% Dry @  
342  
838 Ptrs. Nap. Over @ 195 Dry @ 410  
511 B. H. Gasoline Over @ 118 Dry @ 382

2-7-17

Avg Kiefer Cars Over @ 89 Dry @ 355  
Avg Kiefer Cars Over @ 84 Dry @ 345

2-9-17

Avg Kiefer Cars Over @ 78 Dry @ 350

2-13-17

Over—Kiefer Gas. A. B. C. Car 1331 & 934 Over @ 43 Dry @  
360

2-14-17

Avg Kieffer Cars Over @ 83 Dry @ 354

2-15-17

Avg Kieffer Gas Cars Over @ 86 Dry @ 355

2-20-17

Avg Kiefer Cars Over @ 84 Dry @ 355

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**Government's Exhibit 112.**

2-24-17

Avg Kiefer Cars Over @ 86 Dry @ 355

2-26-17

Avg Kiefer Cars Over @ 82 Dry @ 354

2-27-17

Avg Kiefer Cars Over @ 90 Dry @ 363

2-28-17

520 Navy Gasoline Over @ 120 Over 275—83% Over @  
350—95% Dry @ 352

511	Gasoline Over @ 128 Dry @ 383
805	Gasoline Over @ 104 Dry @ 384
Avg	Kiefer Cars Over @ 85 Dry @ 348
	3-3-17
Avg	Kiefer Cars Over @ 94 Dry @ 354
	3-4-17
Avg	Kiefer Cars Over @ 78 Dry @ 359
	3-7-17
520	Navy Gasoline Over @ 131 Over @ 275—80% Over @ 350—95% Dry @ 363
511	Gasoline Over @ 132 Dry @ 392
805	Gasoline Over @ 152 Dry @ 388
857	Navy Gasoline Over @ 128 Over @ 275—78% Over @ 350—95% Dry @ 357
Avg	Kiefer Cars Over @ 93 Dry @ 347
	3-10-17
Avg	Kieffer Cars Over @ 86 Dry @ 355
	3-13-17
520	Navy Gasoline Over @ 130 Over @ 275—83% Over @ 350—95% Dry @ 345 Recovery 96%
511	Gasoline Over @ 130 Dry @ 388
805	Gasoline Over @ 110 Dry @ 360
857	Navy Gasoline Over @ 127 Over @ 275—80% Over @ 350—95% Dry @ 360 Recovery 96%
Avg	Kiefer Cars Over @ 79 Dry @ 348
	3-17-17
520	Navy Gasoline Over @ 126 Over @ 275—78% Over @ 350—95% Dry @ 366 Rec. 96%
511	Gasoline Over @ 110 Dry @ 368
805	Gasoline Over @ 120 Dry @ 364
	3-19-17
Avg	Kiefer Cars Over @ 90 Dry @ 348
	3-20-17
520	Navy Gasoline Over @ 128 Over @ 275—78% Over @ 350—95% Dry @ 370 Recovery 95.5%
511	Gasoline Over @ 120 Dry @ 386
805	Gasoline Over @ 120 Dry @ 368
Avg	Kiefer Cars Over @ 91 Dry @ 356
	3-23-17
520	Navy Gasoline Over @ 130 Over @ 275—78% Over @ 350—95% Dry @ 370

1446 GULF REFINING COMPANY, A CORPORATION, *vs.*

511	Gasoline Over @ 122 Dry 370
805	Gasoline Over @ 120 Dry @ 390
857	Navy Gasoline Over @ 134 Over @ 275—83% Over @ 350—95% Dry @ 340
	3-24-17
Avg	Kiefer Cars Over @ 85 Dry @ 340
	3-27-17
Avg	Kiefer Cars Over @ 81 Dry @ 346
	3-29-17
Avg	Kiefer Cars Over @ 85 Dry @ 370
	3-30-17
520	Navy Gasoline Over @ 130 Over @ 275—78% Over @ 350—95% Dry @ 368
511	Gasoline Over @ 120 Dry @ 378
805	Gasoline Over @ 112 Dry @ 377

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**Government's Exhibit 113.**

	9-5-17
520	Navy Gasoline Over @ 150 Over @ 221—32% Over @ 275—73% Over 356—94% Dry @ 360 Recovery 95 o/o
511	Gasoline Over @ 45 Dry @ 400
805	Gasoline Over @ 100 Dry @ 390
838	Pts. Nap. Over @ 200 Dry @ 412
	9-9-17
Car	Unrefined Naphtha Over @ 98 Dry @ 368
	9-10-17
Unrefined Naphtha Over @ 98 Dry @ 360	
	9-11-17
520	Navy Gasoline Over @ 136 Over @ 221—32% Over @ 275—73% Over @ 356—94% @ 360 Recovery 95 o/o
511	Gasoline Over @ 140 Dry @ 398
805	Gasoline Over @ 125 Dry @ 400
838	Pts. Dist. Over @ 197 Dry @ 417
Unrefined Naphtha 99 over—360 dry—	
	9-12-17
Unrefined Naphtha over @ 102 Dry @ 358	
	9-13-17
Unrefined Naphtha over 101 Dry 370	

## 9-15-17

- 520 Navy Gasoline Over 152—Over 221—32% 275—739  
Over @ 356—94 Dry @ 357 Recov—95%  
512 Gasoline Over 148 Dry 392  
805 Gasoline Over 140 Dry 393  
838 Pts. Nap. Over 187 Dry 410  
Unrefined Nap. Over @ 97 Dry @ 376

## 9-17-17

- Unrefined Naph Over 99 Dry 368

## 9-18-17

- 520 Navy Gasoline Over @ 138 Over @ 221—31% Over @  
275—71% 356—93 % Dry @ 360 Recovery—95  
512 Gasoline Over @ 145 Dry @ 395  
805 Gasoline Over @ 101 Dry @ 388  
857 Gasoline Over @ 138 Dry @ 373  
Unrefined Naphtha Over 102 Dry 356

## 9-21-17

- Unrefined Naphtha Over 98 Dry 364

## 9-22-17

- Unrefined Naphtha Over 96 Dry 365

## 9-23-17

- Unrefined Naphtha over—100 Dry 372

## 9-24-17

- Unrefined Naphtha Over 96 Dry 372

## 9-25-17

- Unrefined Naphtha Over 102 Dry 376

## 9-26-17

- Unrefined Naphtha Over 100 Dry 390

## 9-27-17

- Unrefined Naphtha Over 100 Dry 376

## 9-29-17

- Unrefined Naphtha Over @ 89 Dry @ 380

## 9-30-17

- Unrefined Naphtha Over @ 87 Dry @ 385

## 10-1-17

- 520 Navy Gasoline Over @ 146 Over @ 221—32% Over @  
275—72% Over @ 356—94% Recovery 96 o/o Dry 365  
511 Gasoline Over @ 151 Dry @ 419

1448 GULF REFINING COMPANY, A CORPORATION, vs.

512 Gasoline Over @ 140 Dry @ 424  
805 Gasoline Over @ 124 Dry @ 395  
857 Gasoline Over @ 152 Dry @ 388  
838 Pts. Naphtha Over @ 201 Dry @ 441

10-2-17

Avg on Kiefers over @ 118 Dry @ 398

10-4-17

Average on Kiefer Cars Over @ 98 Dry @ 376

10-5-17

1 Car of Kiefer Over—100 Dry—388

10-7-17

520 Navy Gasoline Over—Over 221 Over—275 Over—356  
Recovery Dry  
805 Gasoline Over—120 Dry 398  
857 Gasoline Over—100 Dry—382

10-11-17

Average of Kiefer Cars Over @ 90 Dry @ 378

10-14-17

805 Gasoline Over—110 Dry—392  
857 Gasoline Over—106 Dry—388  
511 Gasoline Over—120 Dry 415  
512 Gasoline Over—141 Dry 412

10-19-17

Average on Kiefer Cars Over—91 Dry—380

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**Government's Exhibit 114.**

10-20-17

Average on Kiefer Cars Over—85 Dry—378

10-23-17

Avg. on Kiefer Cars Over—85 Dry—374

10-24-17

520 Navy Gasoline Over—145 221—32% 275—73% 356—  
95% Recovery—97% Dry—360  
511 Gasoline Over—118 Dry—415  
512 Gasoline Over—130 Dry—420  
805 Gasoline Over—100 Dry—387  
857 Gasoline Over—137 Dry 398  
838 Pts. Naphtha Over—184 Dry 436  
Avg. Kiefer Cars Over—83 Dry—375

10-25-17

Average on Kiefer Over—93 Dry—355

10-30-17

520 Navy Gasoline Over @ 154 221—31% 375—72% 356—  
 94% Recovery—95% Dry—362  
 511 Gasoline Over—124 Dry—412  
 805 Gasoline Over—102 Dry—394  
 Avg Kiefer Over 84 Dry 380

10-31-17

512 Gasoline Over—120 Dry 400  
 Avg. Kiefer Over 87 Dry 387

11-1-17

520 Navy Gasoline Over @ 151 221—30% 275—72% 356—  
 95% Recovery—96% Dry—365  
 805 Gasoline Over—112 Dry—397  
 Kiefer Car Over 93 Dry 386

11-2-17

520 Navy Gasoline Over @ 149 221—29% 275—71% 354—  
 Avg Kiefer Over 87 Dry 387  
 511 Gasoline Over—131 Dry—398  
 512 Gasoline Over—130 Dry—400  
 857 Gasoline Over—147 Dry—400  
 805 Gasoline Over—104 Dry—399  
 Avg. Unrefined Nap Cars. Over 80 Dry 400

11-3-17

520 Navy Gasoline Over @ 148 221—29% 275—72% 356—  
 95% Recovery 97% Dry—366  
 511 Gasoline Over @ 165 Dry @ 415  
 805 Gasoline Over @ 102 Dry @ 400  
 857 Gasoline Over @ 145 Dry @ 401  
 838 Pts. Naphtha Over @ 190 Dry @ 430

11-4-17

805 Gasoline Over @ 98 Dry @ 388  
 857 Gasoline Over @ 149 Dry @ 397  
 838 Pts. Naphtha Over @ 189 Dry @ 422  
 Avg. Kiefer Cars Over @ 85 Dry @ 385

11-5-17

520 Navy Gasoline Over @ 157 221—29% 275—71% 356—  
 95% Recovery—97% Dry—365  
 512 Gasoline Over @ 121 Dry @ 402  
 805 Gasoline Over @ 97 Dry @ 386

1450 GULF REFINING COMPANY, A CORPORATION, vs.

857 Gasoline Over @ 120 Dry @ 415  
 838 Pts. Naphtha Over @ 191 Dry @ 427

11-9-17

520 Navy Gasoline Over @ 158 221—29% 275—72% 356—  
 95% Recovery—97% Dry—365  
 512 Gasoline Over @ 120 Dry @ 405  
 805 Gasoline Over @ 97 Dry @ 364  
 857 Gasoline Over @ 148 Dry : 405  
 838 Pts. Naphtha Over @ 180 Dry @ 417  
 Avg Kiefer Cars Over @ 86 Dry @ 387

11-14-17

511 Gasoline Over @ 138 Dry @ 402  
 512 Gasoline Over @ 132 Dry @ 398  
 805 Gasoline Over @ 105 Dry @ 395  
 857 Gasoline Over @ 132 Dry @ 401  
 Avg Kiefer Cars Over @ 90 Dry @ 380

11-15-17

520 Navy Gasoline Over @ 150 221—29% 275—73% 356—  
 96% Recovery 98% Dry 372  
 511 Gasoline Over @ 138 Dry @ 412  
 512 Gasoline Over @ 138 Dry @ 397  
 805 Gasoline Over @ 102 Dry @ 380  
 857 Gasoline Over @ 132 Dry @ 404  
 838 Pts. Naphtha Over @ 178 Dry @ 426

11-16-17

511 Gasoline Over @ 128 Dry @ 430  
 512 Gasoline Over @ 128 Dry @ 408  
 805 Gasoline Over @ 98 Dry @ 398  
 857 Gasoline Over @ 108 Dry @ 408  
 Avg Kiefer Cars Over 88 Dry 386  
 Avg Kiefer Cars Over @ 87 Dry 380

11-21-17

520 Navy Gasoline Over 221 275 356 Recovery Dry  
 511 Gasoline Over 122 Dry 415  
 512 Gasoline Over 118 Dry 408  
 805 Gasoline Over 108 Dry 390  
 857 Gasoline Over 119 Dry 398  
 838 Pts. Naphtha Over 190 Dry 418

11-23-17

520 Navy Gasoline Over 142 221—20% 275—54% 356—  
 90% Recovery 96% Dry 408  
 511 Gasoline Over 130 Dry 408

512	Gasoline Over 108 Dry 409
805	Gasoline Over 110 Dry 314
857	Gasoline Over 114 Dry 399
838	Pts. Naphtha Over 188 Dry 398
855	S. C. Gasoline Over 136 230—34% 302—85% Above 302 8.6% Dry 34.6

## 11-26-17

520	Gasoline Over 140 Dry 418
512	Gasoline Over 116 Dry 402
805	Gasoline Over 112 Dry 412
857	Gasoline Over 128 Dry 430
Avg.	Kiefer Cars Over 96 Dry 376

## 11-28-17

520	Gasoline Over 138 Dry 414
511	Gasoline Over 126 Dry 406
512	Gasoline Over 118 Dry 402
805	Gasoline Over 98 Dry 408
857	Gasoline Over 88 Dry 396
Avg.	Kiefer Cars Over 86 Dry 381

## 11-30-17

511	Gasoline Over 128 Dry 404
512	Gasoline Over 118 Dry 407
520	Gasoline Over 136 Dry 402
805	Gasoline Over 108 Dry 401
857	Gasoline Over 100 Dry 394
Avg.	Kiefer Cars Over 92 Dry 380

## 12-1-17

511	Gasoline Over 132 Dry 403
512	Gasoline Over 110 Dry 404
520	Gasoline Over 146 Dry 402
805	Gasoline Over 100 Dry 394
857	Gasoline Over 96 Dry 396
Avg.	Kiefer Cars Over 90 Dry 395

## 12-2-17

511	Gasoline Over 140 Dry 404
512	Gasoline Over 114 Dry 402
520	Gasoline Over 148 Dry 404
805	Gasoline Over 104 Dry 381
857	Gasoline Over 88 Dry 396

## 12-3-17

805	Gasoline Over 102 Dry 396
857	Gasoline Over 100 Dry 407

1452 GULF REFINING COMPANY, A CORPORATION, *vs.*

817 Gasoline Over 114 Dry 403  
Avg. Kiefer Cars Over 90 Dry 364

12-4-17

511 Gasoline Over 130 Dry 422  
512 Gasoline Over 12.1 Dry 405  
520 Gasoline Over 154 Dry 406  
805 Gasoline Over 105 Dry 406  
857 Gasoline Over 88 Dry 398  
838 Pts. Naphtha Over 194 Dry 432

12-5-17

511 Gasoline Over 124 Dry 424  
512 Gasoline Over 110 Dry 403  
520 Gasoline Over 152 Dry 400  
805 Gasoline Over 102 Dry 405  
857 Gasoline Over 89 Dry 398  
Avg. Kiefer Cars Over 89 Dry 380

12-6-17

Avg. Kiefer Cars Over 89 Dry 397

12-8-17

Avg. Kiefer Cars Over 92 Dry 395

12-10-17

Avg. Kiefer Cars Over 90 Dry 375

Tuesday 12/11/17

Avg. Kiefer Cars Over 89 Dry 394

12/12/17

Avg. Kiefer Cars Over 84 Dry 388

12-14-17

511 Gasoline Over 140 Dry 401  
512 Gasoline Over 110 Dry 408  
520 Gasoline Over 110 Dry 418  
805 Gasoline Over 100 Dry 404  
838 Pts. Naphtha Over 195 Dry 444

12-15-17

511 Gasoline Over 140 Dry 412  
512 Gasoline Over 104 Dry 404  
520 Gasoline Over 111 Dry 422  
805 Gasoline Over 104 Dry 402  
857 Gasoline Over 133 Dry 415  
838 Pts. Naphtha Over 185 Dry 438  
Avg. Kiefer Cars Over 88 Dry 364

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**Government's Exhibit 115.**

12-17-17

Avg. Kiefer Cars—Over 86—Dry 390

12-20-17

Avg. Kiefer Cars—Over 85—Dry 386

12-24-17

511 Gasoline—Over 115—Dry 420

805 Gasoline—Over 94—Dry 376

857 Gasoline—Over 136—Dry 420

838 Pts. Naphtha Over 180—Dry 440

Avg. Kiefer Cars Over 90—Dry 378

12-27-17

Avg. Kiefer Cars—Over 98 Dry 384

12-28-17

511 Gasoline—Over at 118—Dry at 420

805 Gasoline—Over 114—Dry 410

857 Gasoline Over 95—Dry 369

838 Pts. Naphtha Over 174 Dry 415

12-29-17

Avg. Kiefer Cars—Over 92—Dry 355

12-30-17

Avg. Kiefer Car—Over 95—Dry 315

1-3-18

Avg. Kiefer Cars—Over 90—Dry 378

1-5-18

Avg. Kiefer Cars—Over 80—Dry 360

1-7-18

Avg. Kiefer Cars—Over 90—Dry 386

1-8-18

Avg. Kiefer Cars—Over 101—Dry 399

1-10-18

Avg. Kiefer Cars—Over 75—Dry 365

1-11-18

512 Gasoline—Over 130—Dry 390

805 Gasoline—Over 132—Dry 391

857 Gasoline—Over 82—Dry 365

1-20-18

805 Gasoline—Over 128—Dry 397  
857 Gasoline—Over 94—Dry 365

1-24-18

512 Gasoline—Over 140—Dry 391  
805 Gasoline—Over 132—Dry 406  
857 Gasoline—Over 83—Dry 356  
838 Pts. Naptha Over 180—Dry 397

1-26-18

Avg. Kiefer Cars—Over 100—Dry 347  
511 Gasoline—Over 110—Dry 402  
512 Gasoline—Over 133—Dry 396  
805 Gasoline—Over 128—Dry 396  
857 Gasoline—Over 79—Dry 361  
838 Pts. Naphtha Over 202—Dry 395  
Avg. Kiefer Cars—Over 90—Dry 400

1-29-18

Avg. Kiefer Cars Over 78—Dry 390

1-31-18

1 Kiefer Car #1979—Over 89—Dry 380

2-2-18

Avg. Kiefer Cars—Over 75—Dry 340

2-3-18

805 Gasoline—Over 120—Dry 400  
857 Gasoline—Over 90—Dry 370

2-4-18

Avg. Kiefer Cars—Over 90—Dry 352

2-8-18

511 Gasoline—Over 135—Dry 416  
512 Gasoline—Over 117—Dry 420  
805 Gasoline—Over 115—Dry 396  
857 Gasoline—Over 96—Dry 363  
Avg. Kiefer Cars—Over 69—Dry 362

2-11-18

Avg. Kiefer Cars, Over 75, Dry 367

2-14-18

Avg. Kiefer Cars, Over 85—Dry 255

2-18-18

Avg. Kiefer Cars, Over 75—Dry 369

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**Government's Exhibit 120.**

	Car	Gals.	Car	Gals.
GRCX	1030	8143	629	7604
	1001	8158	1356	8093
	1092	8138	1358	8092
	1209	8092	328	7062
	1239	8099	445	8140
	1602	8023	1153	8130
	1607	8016	1359	8086
	1014	4161	2008	8148
	1763	8100	1155	8130
	2006	8146	1225	8095
	437	8137	2025	8149
	621	8005	1243	8093
	1039	8157	1397	8099
	1143	8371	2013	8148
	1113	8139	1462	8093
	1378	8093	1061	8180
	1621	8016	1155	8130
	1111	8137	1607	8016
	1619	8016	950	8059
	309	6662	1507	12023
	445	8140	1038	8151
	1080	8185	1206	8089
	1385	8092	332	7065
	422	7044	1029	8225
	1100	8134	1064	8144
	1220	8096	309	6662
	168	7016	332	7065
	1054	8094	1029	8225
	1079	8147	422	7044
	1136	8144	428	8175
	1211	8093	1178	8130
	1232	8095	620	8018
	1602	8023	1083	8140
	1612	8023	1237	8099
	1763	8100	1368	8093
	2016	8153	428	8175
	961	8056	1083	8140
	1024	8145	1201	8082
	973	8056	1206	8089
	2006	8146	1225	8095
	1327	8096	1624	8014
	428	8175	1727	8101
	1278	8092	1852	8170
	1347	8090	1854	8176
	2025	8153	1856	8178

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Car	Gals.		Car	Gals.
1858	8173		1400	8093
1950	8013		1708	8101
1951	8011		2106	8077
1852	8170		2107	8080
1855	8179		2116	8083
1947	8013		2120	8077
1946	8011		2149	8083
1033	8173		2154	8079
1206	8089		2159	8079
1271	8095		2197	8077
1706	8098	GPTX	401	8048
1708	8101		406	8045
924	8059		436	8042
1721	8101		503	8250 I. C. C.
1728	8101			A826
1774	8100		554	8254
1798	8100	GRCX	1250	8098
1366	8093		1430	8095
1865	8175		1816	8212
1245	8096		1854	8176
1710	8100		2123	8080
1786	8100		2166	8078
1978	8014		2197	8077 (?)
1127	8056		422	7044
1366	8093		1718	8103
1774	8100		434	8180
1978	8014		1369	8092
610	8012		1321	8089
1424	8090		1370	8088
2027	8149		1178	8130
GPTX 625	8050	I. C. C. A	1209	8092
		826 Page	434	8180
		17	1229	8086
630	8055	Supp 72	1850	8175
		I. C. C.	1853	8172
		A 785	1232	8095
GRCX 2103	8084		1974	8007
2108	8084		1268	8095
2115	8075		1270	8088
2119	8084		449	7060
2160	8084		1037	8191
2172	8082		1220	8096
2177	8085		1743	8097
2182	8080		1957	8007
2189	8079		1983	8006
2198	8080		1956	8009

	Car	Gals.		Car	Gals.
	1959	8005		1072	8138
	1245	8096		1957	8007
	2022	8152		1277	8093
	1729	8098		1431	8090
GPTX	600	8052		1607	8016
	1071	8136		1979	8015
GRCX	1624	8014		2101	8080
	1983	8006		2120	8077
	1254	8092		1228	8089
	1864	8173		1708	8101
	926	8056		1726	8097
	1981	8008		1744	8096
	1265	8089		2199	8078
	2022	8152		1116	8090
	2124	8084		1383	8096
	2106	8077		1728	8101
	2183	8078		2119	8084
	2150	8074		2160	8084
	2151	8079		1225	8095
	1335	8090		1455	8090
	1712	8101		1470	8098
	924	8059		1611	8017
	2178	8074		2113	8078
	2119	8084		2170	8084
	2171	8079		2197	8077
	764	8044		251	6510
	1211	8093		745	8078
	1446	8093		2112	8083
	1381	8090		1707	8101
	1967	8009		2173	8074
	2110	8081		2183	8078
	2249	8062	Supp 18	2157	8072
	1946	8011		1976	8006
	2245	8072	Supp 18	2194	8081
	1930	8049		1762	8098
	2110	8081		2207	8070
	2200	8072	Supp 18	1956	8009
	2230	8072	Supp 18	2185	8080
	2207	8070		2171	8079
	2240	8072		1549	8029
GPTX	401	8048	(I. C. C. A826)	1956	8009
				2172	8082
GRCX	2155	8080		2178	8074
	2185	8080		2196	8083
	2223	8065		2248	8065
	2120	8077		2209	8065

**Government's Exhibit 135.**

Confirmation of telegram forwarded from Gulf Building, Houston, Texas, via Gulf Pipe Line Company's telegraph service.

(Stamped:) Received Gasoline Dep't File .... Aug 12 1918 Copy to ..... Referred to, ..... Ansd ..... No Ans. Req'd .....

Date August 10, 1918. To W. P. Donovan At Tulsa, Okla. From C. B. Ellis At Houston, Texas.

If any of the rail lines decline to handle unrefined naphtha shipments via rail lines and junction points previously given you, hold up the cars and wire me immediately. Do not want any cars to reach Port Arthur via H&TC or T&NO but they must reach Port Arthur in connection with the Kansas City Southern. This will also apply to shipments from Electra, which should be handled by the GC&SF from Ft. Worth and Kansas City Southern from Beaumont. Have you heard anything further from the Frisco wreck and how did our tank cars and contents fare as compared with the insulated cars? Which cars stood the shock best? 10:35

**TELEGRAM**

HIOGRUIM

Houston Aug 10th 1918

Donovan Tulsa

If any of the rail lines decline to handle unrefined naphtha shipments via rail lines and junction points previously give you hold up the cars and wire me immediately. Do not want any cars to reach Port Arthur via H&TC or T&NO but they must reach Port Arthur in connection with the KCS. This will also apply to shipments from Electra which should be handled by the GC&SF from Ft. Worth and Kansas City Southern from Beaumont. Have you heard anything further from the Frisco wreck and how did our tank cars and contents fare as compared with the insulated cars. Which cars stood the shock best.

Ellis 1148AM

(Stamped) Received Gasoline Dep't File ... Aug 10 1918 Copy to .... Referred to .... Ans'd .... No Ans. Req'd ....

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**Government's Exhibit 136.**

**GULF REFINING COMPANY**

Petroleum and Its Products

G. R. Nutty, Vice President,

Frick Building Annex, Pittsburgh, Pa.

Sales Department: Chas. B. Ellis, Traffic Manager.

May 12th, 1917. File 17-A.

Personal

Mr. W. P. Donovan,  
Supt. Gypsy Oil Co., Tulsa, Okla.

Mr. L. M. Klein,  
T&CA. Gulf Pipe Line Co., Tulsa, Okla.

Gentlemen:

Referring to my wire today.

The K.C.S. was the line that took the initiative to insist on publication of the 19-1/2c rate Unrefined Naphtha between Port Arthur and Oklahoma points and it was my desire to favor them with this Cleveland business via MK&T to Shreveport—KCS to Port Arthur but unfortunately in the publication of Tariff #79 page 80 is so constructed that the rate will not apply from Cleveland to Port Arthur via the MK&T and KCS.

The heading at the bottom of the page—"From Midland Valley Stations—Big Heart—Glen Pool—Muskogee—Tulsa" was inserted in error.

It was the intention that these rates apply from both Midland Valley and MK&T as headed in item 454, but by including the MV stations above T&FS only it prohibits the application of the rate from MK&T points via that line, including Cleveland.

We now have up endeavoring to have this eliminated from the tariff in less than the statutory notice of 30 days. If successful, I would prefer handling via MK&T and KCS at the present time. However, we cannot do so until supplement covering has been issued. If it is possible to hold up a few days longer I will wire you just as soon as I know the date, but if necessary to move the business be sure to route MK&T to Dallas—T&NO to Port Arthur at rate of 19-1/2c per 100 lbs.

Yours truly,

CBE-RFH

Director General of Railroads, has taken possession and assumed control of certain transportation systems described in the Proclamation of the President, of which Proclamation and Order officers, agents and employees of said transportation systems are to take immediate and careful notice. In addition to the provisions therein contained, it is.

UNTIL FURTHER ORDER, DIRECTED THAT:

1. All officers, agents and employees of such transportation systems may continue in the performance of their present regular duties, reporting to the same officers as heretofore and on the same terms of employment.

2. Any officer, agent or employee desiring to retire from his employment shall give the usual and seasonable notice to the proper officer to the end that there may be no interruption or impairment of the transportation service required for the successful conduct of the war and the needs of general commerce.

3. All transportation systems covered by said Proclamation and Order shall be operated as a national system of transportation, the common and national needs being in all instances held paramount to any actual or supposed corporate advantage. All terminals, ports, locomotives, rolling stock and other transportation facilities are to be fully utilized to carry out this purpose without regard to ownership.

4. The designation of routes by shippers is to be disregarded when speed and efficiency of transportation service may thus be promoted.

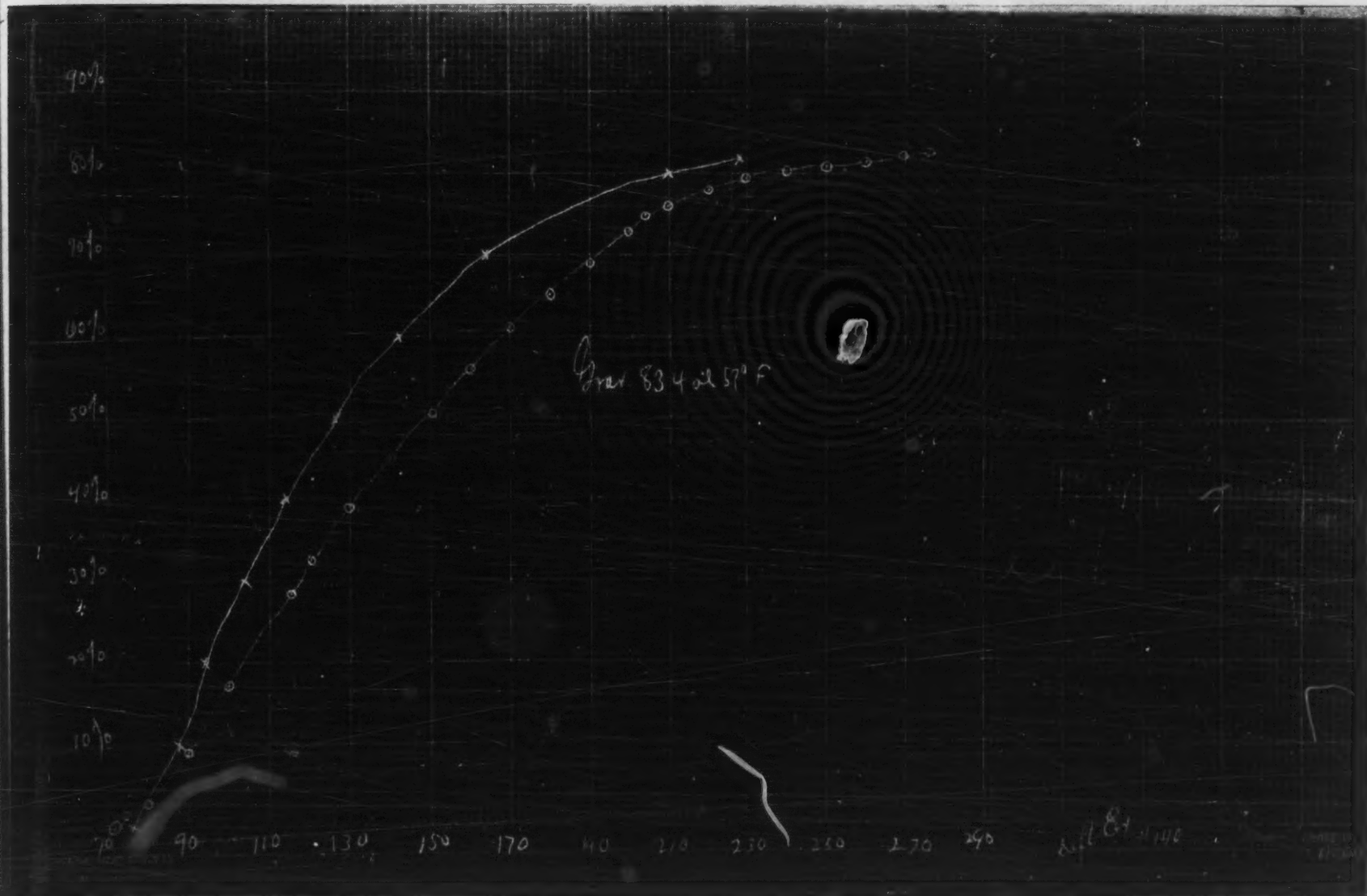
5. Traffic agreements between carriers must not be permitted to interfere with expeditious movements.

6. Through routes which have not heretofore been established because of short hauling or other causes, are to be established and used whenever expedition and efficiency of traffic will thereby be promoted; and if difficulty is experienced in such through routing, notice thereof shall by carriers or shippers or both be given at once to the Director by wire.

7. Existing schedules of rates and outstanding orders of the Interstate Commerce Commission are to be observed, but any such schedules of rates or orders as may hereafter be found to conflict with the purposes of said Proclamation or with this order shall be brought immediately by wire to the attention of the Director.

W. G. McAdoo,  
Director General of Railroads.

Defendant's Exhibit 140.



**Defendant's Exhibit 142.**

In the District Court of the United States for the Eastern District of Texas, Texarkana Division. The Texas Company, Plaintiff, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, Defendants.

The plaintiff above named by its attorneys, complaining of the defendants, shows to this Court and alleges:

**FIRST: FOR A CAUSE OF ACTION.**

1. That the plaintiff, The Texas Company, at all the times hereinafter mentioned, was and still is a domestic corporation duly created by and existing under and by virtue of the Laws of the State of Texas, having its office and principal place of business at Houston, in said State.

2. That the defendant, Texarkana & Fort Smith Railroad Company, at all the times hereinafter mentioned, was and still is a domestic corporation, duly created by and existing under and by virtue of the laws of the State of Texas, having an office in Texarkana, in said State.

3. That the defendant, Walker D. Hines, is Director General of Railroads, by virtue of appointment by the President of the United States, made under and by virtue of Section 8 of the Federal Control Act, approved March 21, 1918, and has exercised and continues to exercise supervision and control over the properties and operations of said Texarkana & Fort Smith Railroad Company, and that the said Walker D. Hines, acting in the capacity aforesaid, has issued an order directing that actions at law and suits in equity growing out of the possession, use, control or operation of any railroad or system of transportation by the Director General of Railroads, which action, suit or proceeding but for Federal Control might have been brought against the Carrier, shall be brought against the said Director General of Railroads.

4. That the amount in controversy in this action exceeds, exclusive of interest and costs, the sum of Three Thousand Dollars (\$3,000) and it is brought to enforce rights arising under the laws of the United States and more particularly under the laws of the United States regulating Commerce, to-wit: The Act to Regulate Commerce, approved February 4, 1887, and acts supplemental thereto and amendatory thereof.

5. The plaintiff in and by its charter is authorized to and is engaged in producing, refining and distributing petroleum and its products.

6. The defendants, Texarkana & Fort Smith Railroad Company, and Director General of Railroads, are common carriers for hire by railroad, and as such are engaged in the transporting of property between places in different states of the United States, and are thus subject to the provisions of said Act to Regulate Commerce, its supplements and amendments, and the property of the said defendant, Texarkana & Fort Smith Railroad Company, is now being operated in its behalf by said Director General under said Federal Control Act.

7. Defendant, Texarkana & Fort Smith Railroad Company, has heretofore established, and there has been maintained by said Railroad Company and Director General with other connecting carriers by railroad, common arrangements for the continuous carriage of property by their railroads from Kiefer, Jenks, and other points in the State of Oklahoma, to Port Arthur, in the State of Texas, and with respect thereto, through routes and joint rates have been duly published, posted and filed with the Interstate Commerce Commission, as required by said Act to Regulate Commerce.

8. That the plaintiff, the Texas Company, at certain points in the State of Oklahoma, among which are Kiefer and Jenks, has at the times hereinafter referred to, derived a liquid from natural gas by a compression process. This liquid has been blended or mixed with a product described as naphtha, until vapor tension of the mixtures was brought below 10 pounds per square inch at a temperature of 100 degrees Fahrenheit. That said Naphtha is mixed or blended with the said liquid derived from natural gas in about equal parts therewith, and the mixed and blended product has been shipped by the plaintiff, The Texas Company, in tank cars from Kiefer and Jenks, Oklahoma, to Port Arthur, in the State of Texas, and such shipments were made continuously from Jenks during the period from January 14, 1918, to April 30, 1918, and from Kiefer during the period from January 22, 1918, to November 20, 1919, and are more particularly hereinafter set forth.

9. The said shipments so made by plaintiff, The Texas Company, from Kiefer and Jenks, in the State of Oklahoma, to Port Arthur, Texas, have been made over the following railroad lines, including the lines of Texarkana & Fort Smith Railroad Company, under through routing and joint rates: Midland Valley Railroad, Kansas City Southern Railway, Texarkana & Fort Smith Railroad Company. That all of said shipments have been made with freight charges collect and all freight charges assessed against said shipments have been

paid by the plaintiff, The Texas Company. That upon all of said shipments so made, the plaintiff, the Texas Company, has been required to pay and has paid the rates specified for Gasoline, as here set forth: that the plaintiff, The Texas Company, has paid said freight charges to Texarkana & Fort Smith Railroad Company.

## TO PORT ARTHUR, TEXAS.

## GASOLINE, CARLOAD.

## Effective Dates.

	8-29-17 to 6-24-18—inc.	6-25-18 to 7-28-18—inc.	7-29-18 to Still effective.
Kiefer, Okla.	(1) 33c	(2) 41½c	(3) 37½c
	5-2-17 to 6-24-18—inc.	6-25-18 to 7-28-18—inc.	7-29-18 to Still effective.
Jenks, Okla.	(4) 39c	(5) 49c	(6) 43½c

## TARIFF.

## ICC CO.

(1)	Item 425B, Supplement 6,	Southwestern Lines	Tariff 79	1186
	Item 660	Southwestern Lines	Tariff 79-A	1219
(2)	Item 660 & Supplement 4,	Southwestern Lines	Tariff 79-A	1219
(3)	Item 660 & Supplement 5,	Southwestern Lines	Tariff 79-A	1219
	Item 660	Southwestern Lines	Tariff 79-B	1253
	Item 660	Southwestern Lines	Tariff 79-C	1338
(4)	Page 42	Southwestern Lines	Tariff 79	1186
	Page 42	Southwestern Lines	Tariff 79-A	1219
(5)	Page 42 & Supplement 4,	Southwestern Lines	Tariff 79-A	1219
(6)	Page 42 & Supplement 5,	Southwestern Lines	Tariff 79-A	1219
	Page 47	Southwestern Lines	Tariff 79-B	1253
	Page 48	Southwestern Lines	Tariff 79-C	1338

10. That in said tariffs are carried rates on a commodity denominated "Unrefined Naphtha." That rates on said "Unrefined Naphtha" are specified in said tariffs from Kiefer and other points in the State of Oklahoma, to Port Arthur, Texas. That the rates given in said tariffs for "Unrefined Naphtha" are as between the same points lower than the rates given on "Gasoline." That all rates on "Unrefined Naphtha" given in said tariffs from different points in Oklahoma to Port Arthur, Texas, are, and at all the times herein mentioned, have been, the same.

11. That during all the period hereinabove mentioned, a competitor of the plaintiff, the Gulf Refining Company, has made shipments as a continuous practice from Kiefer and other points in Oklahoma, to Port Arthur, Texas, of a product of the same sort and kind, belonging to the same class, and

having the same general qualities, and destined for the same use, as the said product shipped by the plaintiff, The Texas Company; and said shipments made by said competitor of The Texas Company, the plaintiff, have been made in tank cars, and the service in the transportation of such shipments has been rendered under circumstances and conditions substantially similar to the circumstances and conditions under which service in the transportation of said shipments made by the plaintiff, The Texas Company, were made; that said shipments thus made by said competitor of the plaintiff, The Texas Company, have been routed and hauled over lines of the same railroads as said shipments made by the plaintiff, The Texas Company, and also over other routings. That upon all said shipments made by said competitor of the plaintiff, The Texas Company, the rates charged thereon have been the rates specified for "Unrefined Naphtha." The said rates specified for "Unrefined Naphtha" from Kiefer to Port Arthur, are given below and as well the rates from Jenks to Port Arthur, which are the same as from Kiefer to Port Arthur; said rates being applicable on all routings specified in said tariffs.

## TO PORT ARTHUR, TEXAS:

## UNREFINED NAPHTHA, Carload.

## Effective Dates.

From	5-2-17 to 6-24-18 inc.	6-28-18 to 7-28-18 inc.	7-29-18 to Still Effective
Jenks, Okla.	(1) 19½c	(2) 24½c	(3) 24c
Kiefer, Okla.	(1) 19½c	(2) 24½c	(3) 24c

## TARIFF.

(1) Item 452 p. 80,	Southwestern Lines Tariff 79, ICC No. 1186
Item 705 p. 81	Southwestern Lines Tariff 79-A ICC No. 1219
(2) Item 705 p. 81 & Sup. 4,	Southwestern Lines Tariff 79-A ICC No. 1219
(3) Item 705 p. 81 & Sup. 5,	Southwestern Lines Tariff 79-A ICC No. 1219
Item 705 p. 92	Southwestern Lines Tariff 79-B ICC No. 1263
Item 705 p. 97	Southwestern Lines Tariff 79-C ICC No. 1233

12. That there is set forth in "Exhibit 'A'" which is hereto annexed and made a part hereof, a statement showing each shipment made by the plaintiff, The Texas Company, as above alleged during said period, and the amounts paid thereon as freight charges, together with the amounts assessable as freight charges against said shipment upon basis of rates allowed to said competitor of the plaintiff.

13. That because of said difference in rates imposed for like and contemporaneous service under substantially similar circumstances and conditions, The Texas Company, the plain-

tiff, has been required to pay and has paid sums grossly in excess of the rates which it would have paid had it enjoyed the same rates as those accorded to its competitor during the period hereinabove referred to.

14. That the Gulf Refining Company has by reason of said difference in rates applied to said shipments been enabled to market certain products derived or developed from the commodities so shipped by it at an expense less than that required to be borne by the plaintiff, The Texas Company, in the marketing of similar commodities.

15. That the plaintiff, The Texas Company, markets the product derived by it from the commodity shipped as hereinabove set forth, in competition with the Gulf Refining Company in marketing its product derived from the commodity as hereinabove set forth.

16. That by reason of said unjust discrimination and because of the difference in rates hereinabove set forth as applied to the plaintiff, The Texas Company, and its competitor, the Gulf Refining Company, the plaintiff has sustained loss and been damaged in its business. That the plaintiff, The Texas Company, has been injured and damaged by the defendants' unjustly discriminatory acts and deeds forbidden, and done in violation of said Act to Regulate Commerce, its amendments and supplements, in the sum of Fifteen Thousand, One Hundred and Thirty-seven and Thirty-seven One Hundredths Dollars (\$15,137.37).

Wherefore, the plaintiff demands judgment against the defendants, and each of them, jointly and severally, for the sum of Fifteen Thousand, One Hundred Thirty-seven and Thirty-seven One Hundredths Dollars (\$15,137.37), together with interest and costs of this action.

## SECOND: FOR A SECOND CAUSE OF ACTION.

That the plaintiff, The Texas Company, hereby incorporates, adopts, repeats and re-alleges each and every of the allegations set forth above and contained in paragraphs 1-16, inclusive, of the First Cause of Action, with the same purpose and effect as though here set out at length.

That under the tariffs herein referred to, duly posted and filed with the Interstate Commerce Commission, as required by said Act to Regulate Commerce, and effective at the times herein mentioned, the rates justly, fairly and properly applicable to the shipments herein set forth as made by the plaintiff, The Texas Company, and the only rates thus ap-

plicable are the rates charged to said competitor of the plaintiff, The Texas Company, on its shipments as above set forth, and that all freight charges against said shipments paid by the plaintiff over and above the charges which would have been made against said shipments had the same rates been accorded to the plaintiff on its shipments as were accorded to said competitor of the plaintiff on said shipments made by said competitor, were overcharges.

That the overcharges thus made by the defendants and paid by the plaintiff amount to the sum of Fifteen Thousand One Hundred Thirty-seven & Thirty-seven One Hundredths Dollars (\$15,137.37), as is set forth in "Exhibit 'A'," and the plaintiff, The Texas Company, has been injured and has suffered damage in its business by reason of said overcharges to the extent and the amount thereof.

Wherefore, the plaintiff demands judgment against the defendants, and each of them, jointly and severally, for the sum of Fifteen Thousand One Hundred Thirty-seven & Thirty-seven One Hundredths Dollars (\$15,137.37), together with interest and the costs of this action.

Robert A. John, per C. J. L.,  
James L. Nesbitt, per C. J. L.,  
Conrad J. Landram,  
Attorneys for Plaintiff.

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## SHIPMENTS FROM JENKS, OKLAHOMA, TO PORT ARTHUR, TEXAS

Date Shipped	Car		Route	Charges Assessed		Charges Based on Unrefined Rate					
	Initial Number			Freight	Tax	Total	Weight	Rate	Freight	Tax	Total
Jan 14-18	TCX 4743	MV-KCS-T&FS	179 80	5 39	185 19	54489	195	106 25	3 19	109 44	75 75
Jan 14-18	TCX 476	"	220 41	5 61	227 02	66792	195	130 24	3 91	134 15	92 87
Jan 14-18	NOX 8035	"	176 26	5 29	181 55	53413	195	104 16	3 12	107 28	74 27
Jan 18-18	TCX 4565	"	175 48	5 26	180 74	53176	195	103 89	3 11	106 80	73 94
Jan 18-18	TCX 4558	"	179 79	5 39	185 18	54483	195	106 24	3 19	109 43	75 75
Jan 18-18	TCX 4589	"	175 18	5 26	180 44	53083	195	103 51	3 11	106 62	73 82
Jan 19-18	TCX 4828	"	177 11	5 31	182 42	53671	195	104 66	3 14	107 80	74 62
Jan 28-18	TCX 2617	"	179 75	5 39	185 14	54469	195	106 21	2 19	109 40	75 74
Jan 28-18	TCX 488	"	220 32	6 61	226 93	66765	195	130 19	3 91	134 10	92 83
Jan 28-18	TCX 4706	"	179 77	5 39	185 16	54476	195	106 23	3 19	109 42	75 74
Jan 31-18	TCX 4648	"	179 83	5 39	185 22	54496	195	106 27	3 19	109 46	75 76
Feb 4-18	TCX 3104	"	175 44	5 26	180 70	53163	195	103 67	3 11	106 78	73 92
Feb 4-18	TCX 567	"	232 37	5 97	239 34	70415	195	137 31	4 12	141 43	97 91
Feb 9-18	TCX 4463	"	179 73	5 39	185 12	54463	195	106 20	3 19	109 39	75 73
Feb 16-18	TCX 4288	"	178 93	5 37	184 30	54219	195	105 73	3 17	108 90	75 40
Feb 16-18	TCX 4636	"	179 82	5 39	185 21	54489	195	106 25	3 19	109 44	75 77
Feb 25-18	TCX 4706	"	179 77	5 29	185 16	54476	195	106 23	3 19	109 42	75 74
Feb 25-18	TCX 604	"	232 39	6 97	239 36	70415	195	137 31	4 12	141 43	97 93
Feb 27-18	TCX 4485	"	179 77	5 39	185 16	54476	195	106 23	3 19	109 42	75 74
Mar 7-18	TCX 2690	"	179 55	5 39	184 94	54410	195	106 10	3 18	109 28	75 66



## Exhibit A—Continued.

## SHIPMENTS FROM KIEFER, OKLAHOMA, TO PORT ARTHUR, TEXAS

Date Shipped	Car Initial Number	Route	Charges Assessed		Total	Charges Based on Unrefined Rate			Total	Difference
			Freight	Tax		Weight	Rate	Freight		
Jan 22-18	TCX 4506	MV-KCS-T&FS	179.86	5.40	185.26	54503	.195	106.28	3.19	109.47
Jan 22-18	TCX 4161	"	179.22	5.38	184.60	54311	.195	105.91	3.18	109.09
Jan 22-18	TCX 2669	"	179.62	5.39	185.01	54430	.195	106.14	3.18	109.32
Jan 22-18	TCX 3086	"	175.33	5.36	180.69	53130	.195	103.60	3.11	106.71
Jan 22-18	TCX 2887	"	176.40	5.29	181.69	53454	.195	104.24	3.13	107.37
Jan 25-18	TCX 4193	"	178.42	5.35	183.77	54067	.195	105.43	3.16	108.59
Jan 25-18	TCX 4574	"	175.58	5.27	180.85	53150	.195	103.64	3.11	106.75
Jan 25-18	TCX 3112	"	175.41	5.26	180.67	53156	.195	103.65	3.11	106.76
Jan 25-18	TCX 3012	"	176.24	5.29	181.53	53407	.195	104.14	3.12	107.26
Jan 30-18	TCX 1302	"	175.58	5.27	180.85	53209	.195	103.76	3.11	106.87
Jan 30-18	TCX 4132	"	176.42	5.29	181.71	53460	.195	104.25	3.13	107.38
Jan 30-18	TCX 4162	"	179.33	5.38	184.71	54245	.195	105.78	3.17	108.95
Jan 30-18	TCX 623	"	232.17	6.97	239.14	70365	.195	137.19	4.12	141.31
Jan 30-18	TCX 4577	"	175.68	5.27	180.95	53236	.195	103.81	3.11	106.92
Jan 30-18	NOX 8020	"	176.30	5.29	181.59	53427	.195	104.18	3.13	107.31
Feb 6-18	TCX 3049	"	175.33	5.26	180.59	53130	.195	103.60	3.11	106.71
Feb 6-18	TCX 4524	"	179.86	5.40	185.26	54503	.195	106.28	3.19	109.47
Feb 6-18	TCX 4599	"	175.50	5.27	180.77	53176	.195	103.69	3.11	106.80
Feb 6-18	TCX 2033	"	179.82	5.39	185.21	54490	.195	106.26	3.19	109.45
Feb 6-18	TCX 1905	"	179.70	5.35	185.09	54457	.195	106.19	3.19	109.38

EXHIBIT A (Shipments from Kiefer to Port Arthur)—Continued.

Date Shipped	Car Initial Number	Route	Charges Assessed		Charges Based on Unrefined Rate						
			Freight	Tax	Total	Weight	Rate	Freight	Tax	Total	Difference
Feb 11-18	TCX 4516	MV-KCS-T&FS	179.85	5.40	185.25	54503	.195	106.28	3.19	109.47	75.78
Feb 11-18	TCX 574	"	232.35	6.97	239.32	70409	.195	137.30	4.12	141.42	97.90
Feb 11-18	TCX 598	"	219.23	6.58	225.81	66436	.195	129.55	3.89	133.44	92.37
Feb 11-18	NOX 8018	"	176.48	5.29	181.77	53480	.195	104.29	3.13	107.42	74.35
Feb 14-18	TCX 4223	"	178.28	5.35	183.63	54027	.195	105.35	3.16	108.51	75.12
Feb 14-18	TCX 2227	"	179.65	5.39	185.04	54443	.195	106.16	3.18	109.34	75.70
Feb 14-18	TCX 4233	"	178.24	5.35	183.59	54014	.195	105.33	3.16	108.49	75.10
Feb 14-18	TCX 4131	"	176.42	5.29	181.71	53460	.195	104.25	3.13	107.38	74.33
Feb 16-18	TCX 4428	"	179.60	5.39	184.99	54424	.195	106.13	3.18	109.31	75.68
Feb 16-18	TCX 2740	"	176.18	5.29	181.47	53387	.195	104.10	3.12	107.22	74.25
Feb 19-18	TCX 2183	"	179.82	5.39	185.21	54490	.195	106.26	3.19	109.45	75.76
Feb 19-18	TCX 4671	"	175.41	5.26	180.67	53156	.195	103.65	3.11	106.76	73.91
Feb 19-18	TCX 3003	"	176.22	5.29	181.51	53401	.195	104.13	3.12	107.25	74.26
Feb 19-18	TCX 2167	"	179.71	5.39	185.10	54457	.195	106.19	3.19	109.38	75.72
Feb 22-18	TCX 251	"	175.04	5.25	180.29	53044	.195	103.44	3.10	106.54	73.75
Feb 22-18	TCX 3105	"	175.37	5.26	180.63	53143	.195	103.63	3.11	106.74	73.89
Feb 22-18	TCX 2904	"	176.29	5.29	181.58	53420	.195	104.17	3.13	107.30	74.28
Feb 22-18	TCX 4257	"	178.89	5.37	184.26	54212	.195	105.71	3.17	108.88	75.38
Feb 22-18	TCX 4273	"	178.77	5.36	184.13	54173	.195	105.64	3.17	108.81	75.32
Feb 22-18	TCX 4287	"	178.86	5.37	184.23	54290	.195	105.69	3.17	108.96	75.37
Feb 28-18	TCX 4413	"	179.84	5.40	185.24	54496	.195	106.27	3.19	109.46	75.78
Feb 28-18	TCX 2065	"	179.85	5.40	185.25	54503	.195	106.28	3.19	109.47	75.78

Feb 28-18	TCX	2727	"	176.18	5.29	181.47	53387	.195	104.10	3.12	107.22	74.25
Feb 28-18	TCX	4748	"	179.81	5.39	185.20	54490	.195	106.26	3.19	109.45	75.75
Mar 3-18	NOX	8031	"	176.37	5.29	181.66	53447	.195	104.22	3.13	107.35	74.31
Mar 3-18	NOX	2885	"	176.31	5.29	181.60	53427	.195	104.18	3.13	107.31	74.29
Mar 3-18	NOX	1992	"	179.69	5.39	185.08	54450	.195	106.18	3.19	109.37	75.71
Mar 3-18	NOX	3004	"	176.31	5.29	181.60	53427	.195	104.18	3.13	107.31	74.29
Mar 7-18	NOX	2124	"	179.82	5.39	185.21	54490	.195	106.26	3.19	109.45	75.76
Mar 7-18	NOX	2693	"	179.82	5.39	185.21	54490	.195	106.26	3.19	109.45	75.76
Mar 7-18	NOX	4238	"	178.40	5.35	183.75	54061	.195	105.42	3.16	108.58	75.17
Mar 7-18	NOX	1802	"	175.15	5.25	180.40	53077	.195	103.50	3.11	106.61	73.79
Mar 7-18	NOX	8016	"	176.33	5.29	181.62	53434	.195	104.20	3.13	107.33	74.29
Mar 9-18	TCX	4547	"	179.90	5.40	185.30	54516	.195	106.31	3.19	109.50	75.80
Mar 9-18	TCX	4561	"	179.90	5.40	185.30	54516	.195	106.31	3.19	109.50	75.80
Mar 12-18	TCX	3070	"	175.48	5.26	180.74	53176	.195	103.69	3.11	106.80	73.94
Mar 12-18	TCX	2167	"	179.70	5.39	185.09	54457	.195	106.19	3.19	109.38	75.71
Mar 12-18	TCX	4685	"	175.29	5.26	180.55	53117	.195	103.58	3.11	106.69	73.86
Mar 14-18	TCX	4310	"	178.88	5.37	184.25	54206	.195	105.70	3.17	108.87	75.38
Mar 14-18	TCX	4620	"	179.90	5.40	185.30	54516	.195	106.31	3.19	109.50	75.80
Mar 14-18	TCX	2777	"	176.24	5.29	181.53	53407	.105	104.14	3.12	107.26	74.27
Mar 14-18	TCX	4508	"	179.85	5.40	185.25	54503	.195	106.28	3.19	109.47	75.78
Mar 16-18	TCX	2901	"	176.15	5.28	181.43	53381	.195	104.09	3.12	107.21	74.22
Mar 16-18	TCX	3107	"	175.44	5.26	180.70	53163	.195	103.67	3.11	106.78	73.92
Mar 16-18	TCX	1881	"	179.69	5.39	185.08	54450	.195	106.18	3.19	109.37	75.71
Mar 18-18	TCX	4682	"	175.55	5.27	180.82	53196	.195	103.73	3.11	106.84	73.98
Mar 18-18	TCX	2881	"	176.29	5.29	181.58	53420	.195	104.17	3.13	107.30	74.28
Mar 18-18	TCX	1036	"	131.85	3.96	135.81	39956	.195	77.91	2.34	80.25	55.56
Mar 21-18	TCX	4335	"	177.44	5.32	182.76	53770	.195	104.85	3.15	108.00	74.76

EXHIBIT A (Shipments from Kiefer to Port Arthur)—Continued.

Date Shipped	Car Initial Number	Route	Charges Assessed		Total	Weight	Charges Based on		Unrefined Rate
			Freight	Tax			Rate	Tax	
Mar 21-18	NOX 8028	MV-KCS-T&FS	176.48	5.29	181.77	53480	.195	3.13	74.35
Mar 21-18	NOX 8020	"	176.48	5.29	181.77	53480	.195	3.13	74.35
Mar 21-18	TCX 4692	"	175.26	5.26	180.52	53110	.195	3.11	73.85
Mar 23-18	TCX 4471	"	179.93	5.40	185.33	54523	.195	3.19	75.82
Mar 23-18	TCX 2096	"	179.86	5.40	185.26	54503	.195	3.19	75.79
Mar 23-18	NOX 8018	"	176.48	5.29	181.77	53480	.195	3.13	74.35
Mar 25-18	TCX 4538	"	179.90	5.40	185.30	54516	.195	3.19	75.80
Mar 25-18	TCX 4539	"	179.62	5.39	185.01	54430	.195	3.18	75.69
Mar 27-18	TCX 3280	"	175.43	5.26	180.69	53229	.195	3.11	73.78
Mar 27-18	TCX 4131	"	176.42	5.29	181.71	53460	.195	3.13	74.33
Mar 27-18	TCX 4732	"	179.68	5.39	185.07	54450	.195	3.19	75.70
Mar 28-18	TCX 3297	"	175.33	5.26	180.59	53196	.195	3.11	73.75
Mar 28-18	TCX 1897	"	179.69	5.39	185.08	54450	.195	3.19	75.71
Mar 30-18	TCX 2635	"	179.77	5.39	185.16	54476	.195	3.19	75.74
Mar 30-18	TCX 3195	"	175.48	5.26	180.74	53177	.195	3.11	73.93
Apr 1-18	TCX 2226	"	179.69	5.39	185.08	54450	.195	3.19	75.71
Apr 1-18	TCX 3113	"	175.43	5.26	180.69	53163	.195	3.11	73.91
Apr 27-18	TCX 4691	"	175.20	5.26	180.46	53090	.195	3.11	73.82
Apr 27-18	TCX 4435	"	179.90	5.40	185.30	54516	.195	3.19	75.80
Apr 27-18	TCX 4678	"	179.41	5.26	180.67	53143	.195	3.11	73.93
Apr 27-18	TCX 3068	"	175.40	5.26	180.66	53150	.195	3.11	73.91
Apr 27-18	TCX 3058	"	175.44	5.26	180.70	53163	.195	3.11	73.92

Apr 29-18	TCX	1802	"	175.15	5.25	180.40	53077	.195	103.50	3.11	106.61	73.79
Apr 29-18	TCX	4423	"	179.77	5.39	185.16	54476	.195	106.23	3.19	109.42	75.74
Apr 29-18	TCX	566	"	232.39	6.97	235.36	70422	.195	137.32	4.12	141.44	97.92
Apr 29-18	TCX	4673	"	175.28	5.26	180.54	53117	.195	103.58	3.11	106.69	73.85
Apr 30-18	TCX	2708	"	174.70	5.24	179.94	52929	.195	103.23	3.10	106.33	73.61
Apr 30-18	TCX	3070	"	175.48	5.26	180.74	53177	.195	103.70	3.11	106.81	73.93
Apr 30-18	TCX	2033	"	179.82	5.39	185.21	54490	.195	106.26	3.19	109.45	75.76
Apr 30-18	TCX	1550	"	175.15	5.25	180.40	53077	.195	103.50	3.11	106.61	73.79
Apr 30-18	TCX	3000	"	176.15	5.28	181.43	53381	.195	104.09	3.12	107.21	74.22
Apr 30-18	TCX	3253	"	175.59	5.27	180.86	53209	.195	103.76	3.11	106.87	73.99
Apr 30-18	TCX	1633	"	175.31	5.26	180.57	53123	.195	103.59	3.11	106.70	73.87
Aug 18-19	TCX	4344	"	201.64	6.05	207.69	53770	.24	129.05	3.87	132.92	74.77
Aug 23-19	TCX	3011	"	200.35	6.01	206.36	53427	.24	128.22	3.85	132.07	74.29
Aug 26-19	TCX	4674	"	199.28	5.98	205.26	53143	.24	127.54	3.83	131.37	73.89
Aug 28-19	TCX	2410	"	201.17	6.04	207.21	53645	.24	128.75	3.86	132.61	74.60
Aug 28-19	TCX	1584	"	198.45	5.95	204.40	52919	.24	127.01	3.81	130.82	73.58
Aug 28-19	TCX	3057	"	199.28	5.98	205.26	53143	.24	127.54	3.83	131.37	73.89
Aug 30-19	TCX	4182	"	201.68	6.08	207.76	54080	.24	129.79	3.89	133.68	74.08
Aug 30-19	TCX	574	"	264.03	7.92	271.95	70409	.24	168.98	5.07	174.05	97.90
Aug 30-18	TCX	4448	"	204.08	6.12	210.20	54424	.24	130.62	3.92	134.54	75.66
Aug 31-19	TCX	1969	"	204.38	6.13	210.49	54496	.24	130.79	3.92	134.71	75.78
Aug 31-19	TCX	3052	"	199.31	5.98	205.29	53150	.24	127.56	3.83	131.39	73.90
Sept 4-19	TCX	2748	"	200.18	6.01	206.19	53381	.24	128.11	3.84	131.95	74.24
Sept 6-19	TCX	3220	"	199.25	5.98	205.23	53137	.24	127.53	3.83	131.36	73.87
Sept 22-19	TCX	3342	"	189.24	5.98	205.22	53130	.24	127.51	3.83	131.34	73.88
Sept 22-19	TCX	4175	"	203.57	6.11	209.68	54285	.24	130.28	3.91	134.19	75.49
Sept 23-19	TCX	1966	"	204.30	6.13	210.43	54483	.24	130.76	3.92	134.68	75.75

EXHIBIT A (Shipments from Kiefer to Port Arthur)—Continued.

Date Shipped	Car Initial Number	Route	Charges Assessed		Total	Weight	Charges Based on		Rate	Unrefined Rate	
			Freight	Tax			Freight	Tax		Freight	Total Difference
Sept 24-19	TCX 2057	MV-KCS-T&FS	204.30	6.13	210.43	54476	130.74	3.92	.24	134.66	75.77
Sept 25-19	TCX 4544	"	204.40	6.13	210.53	54503	130.81	3.92	.24	134.73	75.80
Sept 26-19	TCX 3012	"	200.26	6.01	206.27	53407	128.18	3.85	.24	132.03	74.24
Sept 27-19	TCX 4485	"	204.29	6.13	210.42	54476	130.74	3.92	.24	134.66	75.76
Sept 27-19	TCX 4477	"	204.40	6.13	210.53	54503	130.81	3.92	.24	134.73	75.80
Sept 29-19	TCX 4407	"	204.40	6.13	210.53	54509	130.82	3.92	.24	134.74	75.79
Sept 29-19	TCX 2770	"	200.18	6.01	206.19	53381	128.11	3.84	.24	131.95	74.24
Sept 30-19	TCX 4274	"	203.20	6.10	209.30	54186	130.05	3.90	.24	133.95	75.35
Sept 30-19	TCX 2671	"	204.04	6.12	210.16	54410	130.58	3.92	.24	134.50	75.56
Oct 17-19	TCX 2946	"	200.33	6.01	206.34	53420	128.21	3.85	.24	132.06	74.28
Oct 17-19	TCX 2850	"	200.25	6.01	206.26	53401	128.16	3.84	.24	132.00	74.26
Oct 17-19	TCX 3016	"	200.35	6.01	206.36	53427	128.22	3.85	.24	132.07	74.29
Oct 17-19	TCX 3489	"	200.10	6.00	206.10	53361	128.07	3.84	.24	131.91	74.19
Oct 17-19	TCX 5277	"	203.25	6.10	209.35	54199	130.08	3.90	.24	133.98	75.37
Oct 17-19	TCX 5066	"	199.16	5.97	205.13	53110	127.46	3.82	.24	131.28	73.85
Oct 17-19	TCX 4450	"	199.21	5.98	205.19	53123	127.50	3.83	.24	131.33	73.86
Oct 18-19	TCX 2472	"	200.10	6.00	206.10	53361	128.07	3.84	.24	131.91	74.19
Oct 18-19	TCX 4947	"	199.45	5.98	205.43	53183	127.64	3.83	.24	131.47	73.96
Oct 18-19	TCX 9070	"	200.00	6.00	206.00	53335	128.00	3.84	.24	131.84	74.16
Oct 21-19	TCX 2904	"	200.32	6.01	206.33	53120	128.21	3.85	.24	132.06	74.27
Oct 21-19	TCX 2147	"	204.30	6.13	210.43	54477	130.74	3.92	.24	134.66	75.77
Oct 21-19	TCX 4429	"	204.17	6.13	210.30	54444	130.67	3.92	.24	134.59	75.71

Oct 21-19	TCX	1905	204.21	6.13	210.34	54457	.24	130.70	3.92	134.62	75.72
Oct 21-19	TCX	2431	200.23	6.01	206.24	63394	.24	128.15	3.84	131.99	74.25
Oct 23-19	TCX	2895	200.25	6.01	206.26	63401	.24	128.15	3.84	132.00	74.26
Oct 23-19	TCX	3232	199.42	5.98	205.40	63177	.24	127.62	3.83	131.45	73.95
Oct 23-19	TCX	3268	199.48	5.98	205.46	63196	.24	127.67	3.83	131.50	73.96
Oct 25-19	TCX	2456	200.27	6.01	206.28	63407	.24	128.18	3.85	132.03	74.25
Oct 25-19	TCX	5099	199.04	5.97	205.01	63077	.24	127.38	3.82	131.20	73.81
Oct 27-19	TCX	5079	199.16	5.97	205.13	63110	.24	127.46	3.82	131.28	73.85
Oct 29-19	TCX	3107	199.36	5.98	205.34	63163	.24	127.59	3.83	131.42	73.92
Oct 29-19	TCX	5088	199.24	5.98	205.22	63130	.24	127.51	3.83	131.34	73.88
Oct 31-19	TCX	2188	204.28	6.13	210.41	54476	.24	130.74	3.92	134.66	75.75
Oct 31-19	TCX	2455	200.43	6.01	206.44	63447	.24	128.27	3.85	132.12	74.32
Oct 31-19	TCX	2089	204.36	6.13	210.49	54496	.24	130.79	3.92	134.71	75.78
Oct 31-19	TCX	5027	198.97	5.97	204.94	63057	.24	127.34	3.82	131.16	73.78
Oct 31-19	TCX	3293	199.44	5.98	205.42	63183	.24	127.64	3.83	131.47	73.95
Oct 31-19	TCX	5117	199.24	5.98	205.22	63130	.24	127.51	3.83	131.34	73.88
Nov 11-19	TCX	2477	200.03	6.00	206.03	63342	.24	128.02	3.84	131.96	74.17
Nov 11-19	TCX	4673	199.18	5.98	205.16	63117	.24	127.48	3.82	131.30	73.86
Nov 11-19	TCX	2152	204.46	6.13	210.59	54523	.24	130.86	3.93	134.79	75.80
Nov 20-19	TCX	5083	199.09	5.97	205.06	63090	.24	127.42	3.82	131.24	73.82
Nov 20-19	TCX	3176	199.35	5.98	205.33	63163	.24	127.59	3.83	131.42	73.91
Nov 20-19	TCX	3016	200.34	6.01	206.35	63427	.24	128.22	3.85	132.07	74.28
Nov 20-19	TCX	5114	199.35	5.98	205.33	63163	.24	127.59	3.83	131.42	73.91
Nov 20-19	TCX	2297	204.06	6.12	210.18	54416	.24	130.60	3.92	134.52	75.66
Nov 20-19	TCX	5072	199.16	5.97	205.13	63110	.24	127.46	3.82	131.28	73.85
Nov 20-19	TCX	5103	199.24	6.16	205.40	63130	.24	137.51	3.83	131.34	74.06
Total			31193.20	936.11	32129.31	8982544		19068.00	572.14	19640.14	13489.17

(Endorsed on back) No. 87. The Texas Company *vs.* Texarkana & Ft. Smith Railroad Company and Walker D. Hines, Director General of Railroads. Copy certified. Original bill of Complaint. Filed Jan'y 24, 1920. J. R. Blades, Clerk, by J. B. Furrentine, Deputy.

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In the District Court of the United States for the Eastern District of Texas. At Texarkana, Texas.

I, J. R. Blades, Clerk of the District Court of the United States, for the Eastern District of Texas at Texarkana, in the Fifth Circuit and District aforesaid, do hereby certify the foregoing to be a true and correct copy of Original Bill of Complaint, in cause No. 87 on the Law Docket of said Court entitled: The Texas Company *vs.* Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads as the same now appears on file and of record in my office.

To Certify Which, witness my hand and the seal of said Court at Texarkana in said district, this 6th day of April, A. D. 1920.

J. R. Blades,

Clerk U. S. District Court, E. D. T.

(Seal)

By J. B. Furrentine, Deputy.

(Endorsed on back:) No. 88. U. S. District Court, Eastern District of Texas at Texarkana, Texas. The Texas Company *vs.* Texarkana & Ft. Smith Railroad and Walker D. Hines, Director General of Railroads. Certified copy of Original Bill of Complaint.

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#### **Defendant's Exhibit 143.**

In the District Court of the United States for the Eastern District of Texas. Gulf Refining Company, Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, Defendants.—No. 212, in Equity.

#### **BILL OF COMPLAINT.**

To the Honorable Judges of the District Court of the United States, for the Eastern District of Texas, Sitting in Equity:

The complainant, Gulf Refining Company, brings this suit in equity against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell, the defendants, and alleges:

## First.

The complainant, Gulf Refining Company, is a corporation duly organized and existing under the laws of the State of Texas, having its principal office and place of business at Port Arthur, in said State; and the defendant Texarkana & Fort Smith Railroad Company is a corporation organized and existing under the laws of the State of Texas, having an office at Port Arthur, in said State. Walker D. Hines is Director General of Railroads by virtue of appointment by the President of the United States, and has exercised and continues to exercise supervision and control over the properties and operations of said Texarkana & Fort Smith Railroad Company and that the said Walker D. Hines, acting in the capacity aforesaid has issued an order directing that actions at law and suits in equity growing out of the possession, use, control or operation of any railroad or system of transportation by the Director General of Railroads, which action, suit or proceedings but for Federal control might have been brought against the carrier, shall be brought against the said Director General of Railroads; and the said G. C. Weddell is agent at Port Arthur, of the said Texarkana and Fort Smith Railroad Company and of the said Walker D. Hines, Director General of Railroads, hereinafter called Director General.

## Second.

The amount in controversy in this suit exceeds, exclusive of interest and costs, the sum or value of three thousand dollars (\$3,000), and it is brought to protect and enforce rights arising under laws of the United States, and under a law of the United States regulating commerce, to-wit: The Act of Regulate Commerce, approved February 4, 1887, and acts supplemental thereto and amendatory thereof, and the act known as the Federal Control Act, approved March 21, 1918; and it is brought in equity to avoid a multiplicity of suits at law, and because immediate and irreparable loss and damages will result to complainant unless the relief prayed for herein is granted.

## Third.

1. Complainant, in and by its charter, is authorized to and, amongst other things, is engaged in refining, receiving and shipping petroleum oils, naptha and other commodities, and for those purposes owns and operates a large refinery at Port Arthur, Texas.

2. Defendants, Texarkana & Fort Smith Railroad Company and Director General, are common carriers for hire by railroad, so engaged in transporting property between places in different states of the United States and so subject to the

provisions of said Act to Regulate Commerce, its supplements and amendments; and as the property of said defendant, Texarkana & Fort Smith Railroad Company, is now being operated in its behalf by the said Director General under said Federal Control Act; the said defendants and properties aforesaid are likewise subject to the provisions of said act, including Section 10, thereof.

3. Defendants, Texarkana & Fort Smith Railroad Company and the said Director General, at all times herein mentioned, have established and maintained with other connecting carriers by railroad, common arrangements for the continuous carriage of property wholly by their railroads, from Kiefer and elsewhere in the State of Oklahoma to Port Arthur, in the State of Texas, and with respect thereto through routes and joint rates have been established and the schedules and tariffs showing said joint rates have been duly published, posted and filed with the Interstate Commerce Commission of the United States by said common carriers, including the said defendant, as required by and in conformity with said Act to Regulate Commerce.

4. Among the joint rates so published and filed as aforesaid in force and effect at all the times herein mentioned, and at the time of the filing of this bill of complaint, is a rate covering the transportation over said route from Kiefer, Oklahoma, to Port Arthur, Texas, of unrefined naphtha in tank cars in carload lots, at twenty-four (24) cents per hundred (100) pounds.

5. Complainant, in the regular course of its business, for a long time past has been, it now is, and it intends to continue indefinitely, shipping, daily, large quantities of unrefined naphtha in carload lots from Kiefer, Oklahoma, to Port Arthur, Texas, over and by said route of said common carriers.

6. On or about July 7, 1919, while said rate of twenty-four (24) cents per hundred (100) pounds, so as aforesaid lawfully published and filed, was as aforesaid still in force and effect and the only lawful rate applicable thereto, said defendants, Texarkana and Fort Smith Railroad Company and the said Director General, by and through G. C. Weddell, their agent aforesaid, notified complainant that it would refuse longer to carry and deliver to complainant at Port Arthur its said carload lots of unrefined naphtha coming from Kiefer, Oklahoma, by said route at said rate of twenty-four (24) cents, nor unless the complainant would pay defendants' charges computed at a rate of thirty-seven and one-half ( $37\frac{1}{2}$ ) cents per hundred (100) pounds, notwithstanding defendants have at none of the times herein mentioned lawfully published and

filed with the Interstate Commerce Commission any such schedule naming a rate of thirty-seven and one-half ( $37\frac{1}{2}$ ) cents for such transportation, nor any other rate than said rate of twenty-four (24) cents applicable to said traffic; and, continuously since said date, said defendants have refused to deliver to complainant its carload lots of unrefined naphtha arriving at Port Arthur, consigned to it from Kiefer, Oklahoma, until complainant paid defendants' charges thereon computed at a rate of thirty-seven and one-half ( $37\frac{1}{2}$ ) cents per hundred pounds (100).

7. Since July 7, 1919, defendants have collected from complainant, as and for freight charges, upon the dates shown below and the cars numbered as shown, each containing the quantity in pounds set opposite thereto, the sums shown as charges being at the rate shown, to-wit:

From.	Date.	Car Number.	Pounds.	Charges Collected.	Rate Per Cwt.
Kiefer	7- 9-19	GPTX 309	52939	\$130.86	$37\frac{1}{2}c$
Kiefer	7- 9-19	GPTX 328	52914	130.81	$37\frac{1}{2}c$
Kiefer	7- 9-19	GPTX 399	52955	130.92	$37\frac{1}{2}c$
Kiefer	7- 9-19	GPTX 316	52998	131.01	$37\frac{1}{2}c$
Kiefer	7- 9-19	GPTX 446	52952	130.89	$37\frac{1}{2}c$
Kiefer	7- 9-19	GPTX 406	52952	130.89	$37\frac{1}{2}c$
Kiefer	7- 9-19	GPTX 456	53005	131.03	$37\frac{1}{2}c$
Kiefer	7- 9-19	GPTX 394	53005	131.03	$37\frac{1}{2}c$
Kiefer	7-11-19	GPTX 410	52952	130.89	$37\frac{1}{2}c$
Kiefer	7-12-19	GRCX 2439	53369	131.92	$37\frac{1}{2}c$
Kiefer	7-12-19	GRCX 2443	53328	131.82	$37\frac{1}{2}c$
Kiefer	7-12-19	GPTX 331	52939	130.87	$37\frac{1}{2}c$
Kiefer	7-12-19	MV 8042	66078	163.34	$37\frac{1}{2}c$
Kiefer	7-12-19	GRCX 2442	53698	132.74	$37\frac{1}{2}c$
Kiefer	7-12-19	GPTX 355	53965	130.92	$37\frac{1}{2}c$
Kiefer	7-12-19	GRCX 2339	53375	131.92	$37\frac{1}{2}c$
Kiefer	7-12-19	GPTX 325	52920	130.82	$37\frac{1}{2}c$
Kiefer	7-12-19	MV 8051	66119	163.44	$37\frac{1}{2}c$
Kiefer	7-12-19	MV 8099	66139	163.50	$37\frac{1}{2}c$
Kiefer	7-12-19	MV 8101	66152	163.52	$37\frac{1}{2}c$
Kiefer	7-12-19	GRCX 2445	53335	131.84	$37\frac{1}{2}c$
Kiefer	7-12-19	GRCX 2434	53308	131.78	$37\frac{1}{2}c$
Kiefer	7-12-19	GRCX 2433	53315	131.80	$37\frac{1}{2}c$
Kiefer	7-16-19	GPTX 402	52972	130.95	$37\frac{1}{2}c$
Kiefer	7-16-19	GPTX 336	52952	130.89	$37\frac{1}{2}c$
Kiefer	7-16-19	MV 8011	66112	163.43	$37\frac{1}{2}c$
Kiefer	7-16-19	MV 8023	66099	163.40	$37\frac{1}{2}c$
Kiefer	7-16-19	MV 8093	66152	163.52	$37\frac{1}{2}c$
Kiefer	7-16-19	MV 8067	66119	163.44	$37\frac{1}{2}c$

Complainant paid the foregoing charges under protest and under the coercion of the defendants' refusal to deliver same upon the tender of charges upon the basis of the lawful rate of twenty-four (24) cents per hundred (100) pounds.

8. On July . . . , 1919, there arrived at Port Arthur, Texas, over the aforesaid railroad route from Kiefer, Oklahoma, consigned to complainant, the following cars containing the quantities of unrefined naphtha set opposite the numbers thereof, to-wit:

			Weight in Pounds.
Car	GRCX	2440	53,341
Car	GPTX	457	52,952

Upon which complainant has tendered the defendants' charges computed at the lawful rate aforesaid of twenty-four (24) cents per hundred (100) pounds, and the defendants refused and still continue to refuse to deliver the same to complainant until and unless complainant shall pay charges computed at the rate of thirty-seven and one-half ( $37\frac{1}{2}$ ) cents per hundred (100) pounds.

9. Unless the defendants are restrained by this Honorable Court from doing so, they will continue to refuse to deliver the shipments of unrefined naphtha arriving at Port Arthur, as hereinbefore set forth, excepting upon the complainant paying freight charges computed at the rate of thirty-seven and one half ( $37\frac{1}{2}$ ) cents per hundred (100) pounds, being thirteen and one-half ( $13\frac{1}{2}$ ) cents per hundred pounds in excess of the rate lawfully published and filed as aforesaid, and the only redress which complainant will have in the premises is to institute suits at law to recover said overcharges, which will result in complainant's being compelled to bring a very large number of suits at law, so long as defendants continue in their intended course of attempting to exact charges computed at the rate of thirty-seven and one-half ( $37\frac{1}{2}$ ) cents per hundred (100) pounds.

10. Complainant's aforesaid consignments of unrefined naphtha move principally in cars furnished by complainant of which complainant has a number only sufficient to care for said traffic, if kept moving uninterruptedly, and if defendants are not prevented by order of this Honorable Court from so doing they will as they have threatened to do, hold up and refuse to deliver to complainant, although complainant is willing to pay the lawful rates and charges as aforesaid thereon, said cars so, as aforesaid, to be consigned to it; and as a consequence of this course of conduct on the part of defendants in demanding an unlawful rate greatly in excess of the lawful rate and in withholding complainant's cars and refusing to deliver same,

complainant will be compelled to discontinue part of its operations at great financial loss to it, which loss cannot be admeasured and recovered at law and hence is irreparable, and such loss has already begun, due to the withholding by defendants of the cars hereinbefore mentioned and will immediately continue to grow daily in proportion as such cars are withheld, and as long as said unlawful rates are demanded by defendants.

11. The course of said defendants in so collecting the charges in excess of those named in the tariffs so lawfully published and filed with the Interstate Commerce Commission as aforesaid, and in refusing to deliver to complainant its property until and unless such overcharges shall be paid, is contrary to the provisions of the Act to Regulate Commerce, and denies to this complainant the right provided by said Act to Regulate Commerce to have its property transported at no greater cost than that named in the schedules lawfully published and filed with the Interstate Commerce Commission.

Forasmuch, therefore, as complainant is remediless by the strict rules of the common law, and to the end therefore that complainant may have the relief which it can obtain in a court of equity only, and that the defendants may answer the premises aforesaid, but not upon oath or affirmation, both of which are expressly waived by it, the complainant now prays this honorable court to grant to it an interlocutory injunction, issuing out of and under the rules and practice of said court, to be directed to said defendants, Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, their agent, restraining them and each of them, their successors, agents, servants, employees and assistants, from collecting or attempting to collect charges upon shipments of unrefined naphtha consigned from Kiefer, Oklahoma, to complainant at Port Arthur, Texas, in excess of the lawful rate of twenty-four (24) cents per hundred (100) pounds, so long as the same shall remain in force and effect, as provided by the Act to Regulate Commerce, and restraining them from refusing to deliver to complainant such consignments without the payment by complainant of charges computed at any rate in excess of said lawful rate, and that at the final hearing herein such injunction be made permanent; and that complainant may have such further and other relief in the premises as under the circumstances of the case may be required.

And as in duty bound complainant will ever pray.

Dated, 21st day of July, A. D. 1919.

Jno. E. Green, Jr.,  
Solicitor for Complainant.

Of Counsel—F. C. Proctor, Houston, Texas.

Frank M. Swacker, Wilkins Building, Washington, D. C.

The State of Texas, County of Harris:

John W. Tryon, of lawful age being first duly sworn upon oath states that he is manager at Port Arthur, Texas, for the Gulf Refining Company, the complainant in the above entitled bill; that he has read said bill and knows the contents thereof, and that the matters and things stated therein as facts are true, and that the matters stated upon belief he verily believes to be true.

John W. Tryon.

Subscribed and sworn to before me this the 21st day of July, A. D. 1919. M. Saunders, Notary Public in and for Harris County, Texas.

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In the District Court of the United States for the Eastern District of Texas. Gulf Refining Company, Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, Defendants.—No. 212, in Equity.

#### AMENDMENT TO BILL OF COMPLAINT.

To the Honorable Judges of the District Court of the United States, for the Eastern District of Texas, sitting in equity:

Comes now the complainant, Gulf Refining Company, and, upon leave first had and obtained from this Honorable Court, files this Amendment to its Bill of Complaint herein and amends Paragraph 5 of its complaint herein filed to read as follows:

5. Complainant, in the regular course of its business for a long time past, it is now, and it intends to continue indefinitely, shipping daily large quantities of unrefined naptha in earload lots from Kiefer, Oklahoma, to Port Arthur, Texas, over and by said route of said common carrier; said shipments for more than a year last past have averaged approximately seven earloads per day, and complainant intends to ship daily an equally large number of earloads of said unrefined naptha in the future.

And in addition to the relief prayed in the original bill herein, complainant prays upon final hearing herein that the court find and decree that the shipments set forth in Paragraph 7 of the Bill of Complaint in fact consisted in unrefined naptha; that the legal rate thereon was twenty-four (24) cents per hundred pounds, and that the defendant unlawfully im-

posed upon and collected from complainant charges computed at the rate of thirty-seven and one-half ( $37\frac{1}{2}$ ) cents; and that defendants be required to repay to complainant the excess so as aforesaid collected by them from complainant with respect to said shipments; and that the court further find and decree that the two cars set forth in paragraph 8 of the Bill of Complaint contained unrefined naphtha, and that the legal rate thereon was 24 cents per hundred pounds.

And as in duty bound complainant will ever pray.

Dated this 24th day of July in the year of our Lord, 1919.

Jno. E. Green, Jr.,

Solicitor for Complainant.

Of Counsel—F. C. Proctor, Houston, Texas.

Frank M. Swacker, Wilkins Building, Washington, D. C.

The State of Texas, County of Harris:

Overton E. Abel, of lawful age being first duly sworn upon oath states that he is Assistant Superintendent at Port Arthur, Texas, for the Gulf Refining Company, the complainant in the above entitled bill; that he has read said amendment to the bill of complaint and knows the contents thereof, and that the matters and things stated therein as facts are true, and that the matters stated upon belief he verily believes to be true.

Overton E. Abel.

Subscribed and sworn to before me this the 25th day of July, A. D. 1919.

M. Saunders,

Notary Public in and for Harris County, Texas.

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United States of America, Fifth Circuit, Eastern District of Texas—ss.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify the foregoing to be a true and correct copy of the Bill of Complaint and Amendment to Bill of Complaint in Cause No. 212, on the Equity Docket of said court, entitled Gulf Refining Company vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, as full as the same now appears on file in my office at Beaumont.

To Certify Which, witness my official hand and the seal

of said court at Beaumont, in said District, this 5th day of April A. D. 1920.

(Seal)

(Signed) J. R. Blades,  
Clerk U. S. District Court, E. D. T.

United States of America, Eastern District of Texas.

I, W. L. Estes, United States District Judge for the Eastern District of Texas, do hereby certify that J. R. Blades whose genuine signature appears signed to the foregoing certificate was, at the time of signing same, and is now, Clerk of the District Court of the United States for the Eastern District of Texas and that his official acts as such are entitled to full faith and credit.

I further certify that said altercation is in due form.

Given under my hand at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Signed) W. L. Estes,  
United States District Judge for E. D. T.

United States District Court, Eastern District of Texas.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify, that the Honorable W. L. Estes whose name appears signed to the foregoing certificate, was at the time of signing same, and is now, the judge of the United States District Court for the Eastern District of Texas, and that his said signature is genuine.

To certify which, witness my hand and seal of the said Court at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Seal)

(Signed) J. R. Blades,  
Clerk United States District Court,  
Eastern District of Texas.

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**Defendant's Exhibit 144.**

In the District Court of the United States for the Eastern District of Texas. Gulf Refining Company, Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, Defendants.—No. 212, in Equity.

This case came on to be heard on bill and answer and motion of the complainant for an injunction pendente lite, and on motion of the defendants to dismiss the bill, and was argued by counsel, Mr. John E. Green, Jr., and Mr. Frank M.

Swacker, for complainant, and Mr. J. M. Souby and Mr. Y. D. Carroll for defendants, and upon consideration of the verified bill, the amendments thereto and the affidavit of O. E. Abel, the answer and the aforesaid motions; it is now

Ordered that the motion to dismiss be and it hereby is overruled; and it is further

Ordered that the defendants and each of them, Walker D. Hines, Director General of Railroads of the United States, Texarkana and Fort Smith Railroad Company and G. C. Weddell, their officers, agents, assistants, and employees, and all persons serving under them, be, and they are hereby enjoined until further order of this court from refusing to transport and deliver to complainant, Gulf Refining Company, shipments described by said complainant as unrefined naphtha moving from Kiefer and elsewhere in the State of Oklahoma to Port Arthur, in the State of Texas, upon the tender or payment to said defendants by said complainant of freight charges thereon at the rates lawfully published and filed with the Interstate Commerce Commission applicable to shipments of unrefined naphtha in carload lots (said rate at the present time being twenty-four (24) cents per hundred (100) pounds); and said defendants, their officers, agents, assistants and employees, and all persons serving under them, are further enjoined, until further order of this court, from attempting to collect from said complainant upon shipments in carload lots moving over the lines of railroad under their control, and those connected therewith from Kiefer and elsewhere in the State of Oklahoma to Port Arthur, in the State of Texas, described by said complainant as unrefined naphtha, charges upon rates in excess of those lawfully published and filed with the Interstate Commerce Commission of the United States as applicable to unrefined naphtha; Provided, that complainant, Gulf Refining Company give bond to defendants in the sum of Thirty Thousand (\$30,000.00) Dollars, conditioned that said complainant will abide the decision which may be made herein, and pay all sums of money and costs that may be adjudged against it, if this injunction be dissolved in whole or in part; And it is Further Ordered that defendants have leave to apply to this court at any time to increase said bond upon a showing of its insufficiency.

Ordered that a copy of this decree be served upon said defendants.

Entered this 26th day of July, A. D. 1919.

J. C. Hutchinson, Jr.,  
United States District Court.

(Endorsed) Eq. No. 212. Gulf Refining Company vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell. Interlocutory Decree. Filed July 26, 1919. J. R. Blades, Clerk, by H. C. Blades, Deputy.

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United States of America, Fifth Circuit, Eastern District of Texas—ss.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify the foregoing to be a true and correct copy of the Interlocutory Decree, in Cause No. 212, on the Equity Docket of said court, entitled Gulf Refining Company vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, as fully as the same now appears on file in my office at Beaumont.

To Certify Which, witness my official hand and the seal of said Court at Beaumont, in said District, this 5th day of April, A. D. 1920.

(Seal)

(Signed) J. R. Blades,  
Clerk U. S. District Court, E. D. T.

United States of America, Eastern District of Texas.

I, W. L. Estes, United States District Judge for the Eastern District of Texas, do hereby certify that J. R. Blades *who* genuine signature appears signed to the foregoing certificate was, at the time of signing same, and is now, Clerk of the District Court of the United States for the Eastern District of Texas and that his official acts as such are entitled to full faith and credit.

I further certify that said alteration is in due form.

Given under my hand at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Signed) W. L. Estes,  
United States District Judge for  
the Eastern District of Texas.

United States District Court, Eastern District of Texas.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify, that the Honorable W. L. Estes whose name appears signed to the foregoing certificate, was at the time of signing same, and is now, the Judge of the United States District Court for the Eastern District of Texas, and that his said signature is genuine.

To certify which, witness my hand and seal of the said Court at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Seal)

(Signed) J. R. Blades,

Clerk United States District Court,  
Eastern District of Texas.

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**Defendant's Exhibit 145.**

In the District Court of the United States, for the Eastern District of Texas. Gulf Refining Company, Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, Defendants.—No. 212, in Equity.

State of Texas, County of Harris:

Overton E. Abel, of lawful age, being first duly sworn, upon oath deposes and says:

That I am, and for several years last past have been, employed by the Gulf Refining Company, the complainant in this proceeding, having been during the last three years, and am at present, Assistant Superintendent of its plant at Port Arthur, Texas; as such Assistant Superintendent I am in charge of the outside works and distillation at said plant; and it is a part of my duty to receive and examine and dispose of the cars of unrefined naphtha received by the Gulf Refining Company at Port Arthur, Texas, coming from Kiefer, Oklahoma, and other places in Oklahoma, over the line of railroad of the Texarkana & Fort Smith Railroad Company; and it is also a part of my duty to know and understand the various grades of naphtha and petroleum products; that all of the shipments billed as unrefined naphtha received at Port Arthur, Texas, for more than a year last past coming from Kiefer and elsewhere in Oklahoma over the Texarkana & Fort Smith Railroad, those mentioned in the bill of complaint in this cause, including the two cars now held by the railway company, as set forth in the petition of the complainant, described upon such shipments as containing unrefined naphtha, are, in fact, unrefined naphtha, and not gasoline or any other commodity; that said shipments of unrefined naphtha have during that time averaged seven carloads per day, and that the Gulf Refining Company intends to continue shipping daily an equally large number of carloads of said commodity in the future; that the term "unrefined naphtha" has been, is, and will be, applied as a shipping description with respect only to shipments in fact consisting of unrefined naphtha; that all of the shipments coming to the plant at Port Arthur described as unrefined naphtha

are the same commodity as that contained in the two cars described in the complaint as being held by the carrier; that the detention of the two cars by the carrier set forth in the complaint is already causing substantial interference with complainant's business in that it interferes with the regularity of the movement of unrefined naphtha resulting in financial loss to complainant, and that the continued detention by the carrier of the cars, daily arriving, consigned to complainant will ultimately compel it to shut down parts of its operations at very substantial loss to it, the exact amount of which, however, it is practically impossible to determine because of losses which will result indirectly therefrom.

Overton E. Abel.

Sworn to and subscribed before me, this the 5th day of July, A. D. 1919.

(Seal)

M. Sanders,

Notary Public in and for Harris County, Texas.

(Endorsed) No. 212. In the District Court of the United States, for the Eastern District of Texas. Gulf Refining Company, Complainant, vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, Defendants. Affidavit of Overton E. Abel. Filed Jul 25 1919, J. R. Blades, Clerk, by H. C. Blades, Deputy.

---

United States of America, Fifth Circuit, Eastern District of Texas—ss.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify the foregoing to be a true and correct copy of the Affidavit of Overton E. Abel, in Cause No. 212, on the Equity Docket of said Court, entitled Gulf Refining Company vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, as fully as the same now appears on file in my office at Beaumont.

To Certify Which, witness my official hand and the seal of said court at Beaumont, in said District, this 5th day of April, A. D. 1920.

(Seal)

(Signed) J. R. Blades,

Clerk U. S. District Court, E. D. T.

United States of America, Eastern District of Texas:

I, W. L. Estes, United States District Judge for the Eastern District of Texas, do hereby certify that J. R. Blades whose genuine signature appears signed to the foregoing cer-

tificate was, at the time of signing same, and is now, clerk of the District Court of the United States for the Eastern District of Texas and that his official acts as such are entitled to full faith and credit.

I further certify that said alteration is in due form.

Given under my hand at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Signed) W. L. Estes,

U. S. District Judge for the E. D. T.

United States District Court, Eastern District of Texas.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify, that the Honorable W. L. Estes whose name appears signed to the foregoing certificate, was at the time of signing same, and is now, the Judge of the United States District Court for the Eastern District of Texas, and that his said signature is genuine

To Certify Which, witness my hand and seal of the said Court at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Seal)

(Signed) J. R. Blades,

Clerk United States District Court,  
Eastern District of Texas.

---

#### **Defendant's Exhibit 146.**

In the District Court of the United States for the Eastern District of Texas. Gulf Refining Company, Complainant, vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell, Defendants—In Equity, No. 212.

#### **DEMURRER AND ANSWER.**

To the Honorable Judges of the District Court of the United States for the Eastern District of Texas, sitting in Equity:

Now come the above named defendants and demur to the bill of complaint filed by complainant in this cause, for the reason that said bill does not state facts sufficient to confer jurisdiction upon this court as a court of equity to entertain said complaint. Wherefore, defendants pray that said bill be dismissed.

Subject to the foregoing demurrer and without waiving same, for their answer to the complaint filed herein, defendants state:

I.

These defendants admit the allegations contained in the first paragraph of said complaint.

II.

These defendants deny that the amount in controversy herein, exclusive of interests and costs, equals the sum or value of \$3000.00 and likewise deny that the refusal of this court to grant the relief prayed for by complainant herein will occasion immediate and irreparable loss and damage to the complainant, or will result in a multiplicity of suits at law.

These defendants are without information as to the allegations contained in the first section of paragraph third of the complaint and ask for proof thereof.

These defendants admit the allegations contained in sections two, three and four of said paragraph third of the complaint.

These defendants deny that complainant has been in the past, is now, or intends to continue shipping unrefined naphtha in any quantities from Kiefer, Oklahoma, to Port Arthur, Texas, as alleged in section five of said paragraph third of the complaint, but on the contrary defendants allege, according to their information and belief, that such shipments referred to in said section consist of gasoline.

In answer to section six of said paragraph third of the complaint, defendants state that while there was in effect as alleged by complainant a rate of 24 cents per hundred pounds applicable between the points in question on unrefined or unfinished naphtha, there was and is concurrently in effect a rate of 37½ cents per hundred pounds applicable between said points on gasoline and that in accordance with their information and belief defendants have, since July 7, 1919, asked and demanded of complainant for the transportation of the commodity tendered by complainant for transportation in carload lots from Kiefer, Oklahoma, to Port Arthur Texas, a rate of 37½ cents per hundred pounds, which is the rate lawfully applicable to such transportation on gasoline.

Defendants are not informed as to the shipments alleged by complainant to have been made in section seven of paragraph third and, therefore, ask for proof thereof.

Defendants are informed that the two carload shipments referred to in section eight of said paragraph third contained gasoline and not unrefined naphtha and furthermore that same were transported from Glenn Pool, Okla., instead of Kiefer, Okla., as alleged in said section. Defendants admit, however,

that they did refuse to deliver the two carload shipments in question to complainant until and unless complainant should pay freight charges thereon computed at the rate lawfully applicable on gasoline moving between said points in carload lots.

In answer to the allegations contained in section nine of said paragraph third, these defendants state that so long as they continue to believe that shipments of the commodity in controversy herein made by complainant between the points in question consist of gasoline, they will continue to demand of complainant upon the delivery thereof at destination, the rate lawfully applicable on gasoline; but defendants deny that complainant does not or will not have full and adequate remedies at law for any and all damages which it may suffer as a result of defendants' actions in the premises.

Defendants allege that any holding up or delaying of cars such as is referred to in section ten of paragraph third of the complaint will be due wholly to the action of complainant in refusing to accept shipments which may be tendered it for delivery by defendants and to pay the charges assessed thereon by defendants and will not be due to any action upon the part of these defendants against which complainant is entitled to relief in equity at the hands of this court.

Defendants deny the allegations contained in section eleven of said paragraph third, but state on the contrary that they are undertaking to comply with the provisions of the Act to Regulate Commerce by assessing and collecting for the transportation of the shipments in question the rate lawfully applicable thereon.

Wherefore, having answered, these defendants pray that said complaint may be dismissed.

Orgain, Butler, Bolinger & Carroll,  
Solicitors for Defendants.

S. W. Moore, J. M. Souby, Of Counsel.

(Endorsed) No. 212. Gulf Refining Company, Complainant vs. Texarkana & Fort Smith Railroad Company, et al., Defendants. Demurrer and Answer. Filed Jul. 24, 1919. J. R. Blades, Clerk, by H. C. Blades, Deputy.

---

United States of America, Fifth Circuit, Eastern District of Texas—ss:

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify

the foregoing to be a true and correct copy of the Demurrer and Answer in Cause No. 212, on the Equity Docket of said Court, entitled Gulf Refining Company vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, as fully as the same now appears on file in my office at Beaumont.

To Certify Which, witness my official hand and the seal of said court at Beaumont, in said District, this 5th day of April, A. D. 1920.

(Seal)

(Signed) J. R. Blades,

Clerk U. S. District Court, E. D. T.

United States of America, Eastern District of Texas.

I, W. L. Estes, United States District Judge for the Eastern District of Texas, do hereby certify that J. R. Blades whose genuine signature appears signed to the foregoing certificate was, at the time of signing same, and is now, Clerk of the District Court of the United States for the Eastern District of Texas and that his official acts as such are entitled to full faith and credit.

I further certify that said altercation is in due form.

Given under my hand at Beaumont, Texas this 5th day of April, A. D. 1920.

(Signed) W. L. Estes,

U. S. District Judge for the E. D. T.

United States District Court. Eastern District of Texas.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas do hereby certify, that the Honorable W. L. Estes whose name appears signed to the foregoing certificate, was at the time of signing same, and is now, the Judge of the United States District Court for the Eastern District of Texas, and that his said signature is genuine.

To certify which, witness my hand and seal of the said Court at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Seal)

(Signed) J. R. Blades,

Clerk United States District Court,  
Eastern District of Texas.

---

**Defendant's Exhibit 147.**

In the District Court of the United States for the Eastern District of Texas. Gulf Refining Company. Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell, Defendants.—No. 212, in Equity.

Now comes the Gulf Refining Company, complainant in the above entitled cause, and moves for the issuance of a preliminary injunction in accordance with the prayer of its bill, and for an order of notice upon this motion.

John E. Green, Jr.,

Solicitor for Complainant.

Of Counsel F. C. Proctor, Houston, Texas.

Frank M. Swacker, Wilkins Building, Washington D. C.

---

**ORDER.**

In the District Court of the United States for the Eastern District of Texas, In Chambers:

The Clerk of the United States District Court for the Eastern District of Texas, is ordered to issue a summons to defendants to show cause, if any there be, why a preliminary injunction should not issue as prayed; the summons to be returnable on the 24th day of July, A. D. 1919, at 10 a. m., at Houston, Texas.

J. C. Hutcheson, Jr., Judge.

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United States of America. District Court of the United States for the Eastern District of Texas. Gulf Refining Company, Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell, Defendants.—No. 212, in Equity.

The President of the United States of America—Greeting.

To the defendant, Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell:

You are hereby commanded to appear before the Honorable J. C. Hutcheson, Jr., the duly designated and acting United States District Judge for the Eastern District of Texas, at the Federal Building, at Houston, Texas, on the 24th day of July, A. D. 1919, at 10 o'clock A. M., and show cause, if any there be, why a preliminary injunction should not issue

restraining the Texarkana and Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, agent of said Railroad and of said Director General from attempting to collect upon shipments of unrefined naphtha consigned from Kiefer, Oklahoma, to the Gulf Refining Company at Port Arthur, Texas, charges in excess of the lawful rate of twenty-four (24) cents per hundred (100) pounds, and from refusing to deliver said Gulf Refining Company's cars when the lawful rate of twenty-four (24) cents is tendered.

Witness the Honorable J. C. Hutcheson, Jr., District Judge of said Court this the 21st day of July, in the year of our Lord One Thousand Nine Hundred and Nineteen, and of our Independence, One Hundred and Forty-three.

(J. B. Blades, Clerk)

By (H. C. Blades, Deputy)

---

United States of America, District Court of the United States for the Eastern District of Texas. Gulf Refining Company, Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell, Defendants.—No. 212 in Equity.

United States Marshal's Office, Eastern District of Texas.

I hereby certify that I received the within *write* on the 21st day of July, A. D. 1919, and personally served the same on and by delivering to, and leaving with, G. C. Weddell, defendant named therein personally in the County of Jefferson, in said District, *a copy* of the attached subpoena and also a copy of the bill of complaint in Equity No. 212, together with copy of complainant's application for a preliminary injunction and a copy of the order of the Honorable J. C. Hutcheson, Jr., United States District Judge designated and acting in the Eastern District of Texas.

B. F. Sherrell, United States Marshal.

J. F. McDonald, Deputy.

Dated at Beaumont, in the Eastern District of Texas, the 22nd day of July, A. D. 1919.

---

United States of America, Fifth Circuit, Eastern District of Texas—ss.

I, J. B. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify

the foregoing to be a true and correct copy of the Application for Preliminary Injunction and order thereon; order to show cause and marshal's return thereon in Cause No. 212, on the Equity Docket of said court, entitled Gulf Refining Company vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads and G. C. Weddell, as fully as the same now appears on file in my office at Beaumont.

To Certify Which, witness my official hand and the seal of said court at Beaumont in said district, this 5th day of April A. D. 1920.

(Seal)

(Signed) J. R. Blades,  
Clerk U. S. District Court, E. D. T.

United States of America, Eastern District of Texas.

I, W. L. Estes, United States District Judge for the Eastern District of Texas, do hereby certify that J. R. Blades whose genuine signature appears signed to the foregoing certificate was, at the time of signing same, and is now, Clerk of the District Court of the United States for the Eastern District of Texas and that his official acts as such are entitled to full faith and credit.

I further certify that said altercation is in due form.

Given under my hand at Beaumont, Texas, this 5th day of April A. D. 1920.

(Signed) W. L. Estes,  
United States District Judge for  
the Eastern District of Texas.

United States District Court, Eastern District of Texas.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify that the Honorable W. L. Estes whose name appears signed to the foregoing certificate, was at the time of signing same, and is now, the Judge of the United States District Court for the Eastern District of Texas, and that his said signature is genuine.

To certify which, witness my hand and seal of the said Court at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Signed) J. R. Blades,  
Clerk United States District Court,  
Eastern District of Texas.

---

**Defendant's Exhibit 148.**

In the District Court of the United States for the Eastern District of Texas. Gulf Refining Company, Complainant, against Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, Defendants.—No. 212, in Equity.

Whereas, the Gulf Refining Company plaintiff, in the above styled cause pending in the said court, has this day sued out in said court an injunction to restrain Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, defendants in said suit, from refusing to transport and deliver certain shipments at freight rates lawfully applicable thereto and from attempting to collect charges thereon in excess of those lawfully applicable as described in the petition for injunction.

Now therefore, know all men by these presents, that we, the Gulf Refining Company, as PRINCIPAL, and American Surety Company of New York, as SURETY, do hereby acknowledge ourselves bound to pay to Texarkana & Fort Smith Railroad Company, and Walker D. Hines, Director General of Railroads, and G. C. Weddell the sum of Thirty Thousand (\$30,000) Dollars, conditioned that the Gulf Refining Company, plaintiff in said suit, will abide the decision which may be made therein, and pay all sums of money and costs that may be adjudged against it, if the injunction granted in said suit be dissolved in whole or in part.

Witness our hands this the 26 day of July, A. D. 1919.

Gulf Refining Company Principal.

American Surety Company of New York,  
Surety.

By J. W. Tucker, Attorney in fact.

Countersigned By Sterling Myer, Atty.

July 26, 19.

Approved and ordered filed.

Jos. C. Hutcheson, Jr., Judge.

(Endorsed) Eq. No. 212. Gulf Refining Co. vs. Texarkana & Ft. Smith Railroad Co. et al. Bond of Gulf Refining Co. Filed Jul. 26, 1919, J. R. Blades, Clerk, by H. C. Blades, Deputy.

---

United States of America, Fifth Circuit, Eastern District of Texas—ss.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas, do hereby certify

the foregoing to be a true and correct copy of the Bond of Gulf Refining Company, in cause No. 212, on the Equity Docket of said Court, entitled Gulf Refining Company vs. Texarkana & Fort Smith Railroad Company and Walker D. Hines, Director General of Railroads, and G. C. Weddell, as fully as the same now appears on file in my office at Beaumont.

To certify which, witness my official hand and the seal of said court at Beaumont, in said District this the 5th day of April, A. D. 1920.

(Seal)

J. R. Blades,  
Clerk U. S. District Court, E. D. T.

United States of America, Eastern District of Texas.

I, W. L. Estes, United States District Judge for the Eastern District of Texas, do hereby certify that J. R. Blades whose genuine signature appears signed to the foregoing certificate was, at the time of signing same, and is now, Clerk of the District Court of the United States for the Eastern District of Texas and that his official acts as such are entitled to full faith and credit.

I further certify that said alteration is in due form.

Given under my hand at Beaumont Texas, this 5th day of April, A. D. 1920.

(Signed)

W. L. Estes,  
U. S. District Judge for the E. D. T.

United States District Court Eastern District of Texas.

I, J. R. Blades, Clerk of the District Court of the United States for the Eastern District of Texas do hereby certify, that the Honorable W. L. Estes whose name appears signed to the foregoing certificate, was at the time of signing same, and is now, the Judge of the United States District Court for the Eastern District of Texas, and that his said signature is genuine.

To certify which, witness my hand and seal of the said Court at Beaumont, Texas, this 5th day of April, A. D. 1920.

(Seal)

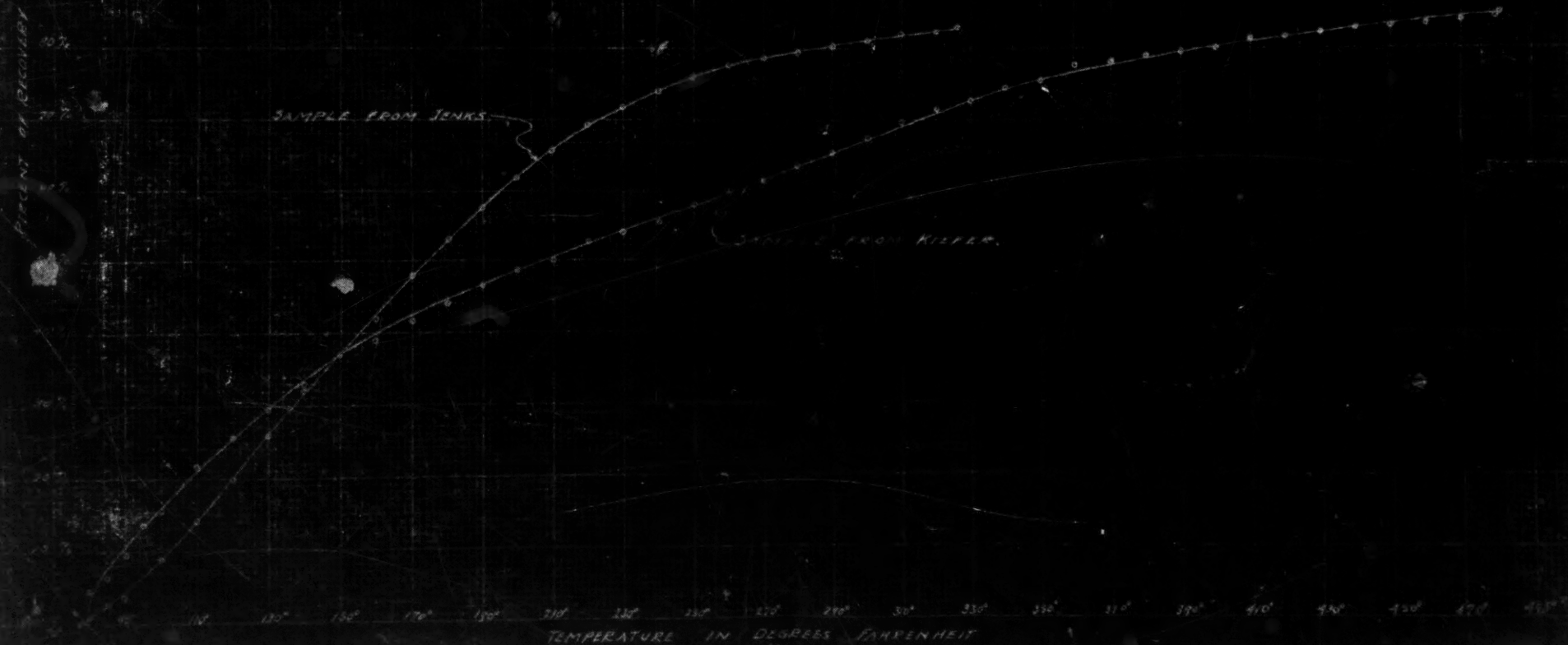
(Signed) J. R. Blades,  
Clerk U. S. District Court, Eastern District of Texas.

---

Defendant's Exhibit 149.

266149

SAMPLES USED IN CAR TESTS  
AUTHORIZED BY THE HON. JUDGE WILLIAMS.  
APRIL 20, 1920





Sept 13 Ec 150  
Bulletin 151

Petroleum Technology 40

DEPARTMENT OF THE INTERIOR

FRANKLIN K. LANE, SECRETARY

BUREAU OF MINES

VAN. H. MANNING, DIRECTOR

# RECOVERY OF GASOLINE FROM NATURAL GAS BY COMPRESSION AND REFRIGERATION

BY

W. P. DYKEMA



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1918

The Bureau of Mines, in carrying out one of the provisions of its organic act—to disseminate information concerning investigations made—prints a limited free edition of each of its publications.

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*First edition. April, 1918.*

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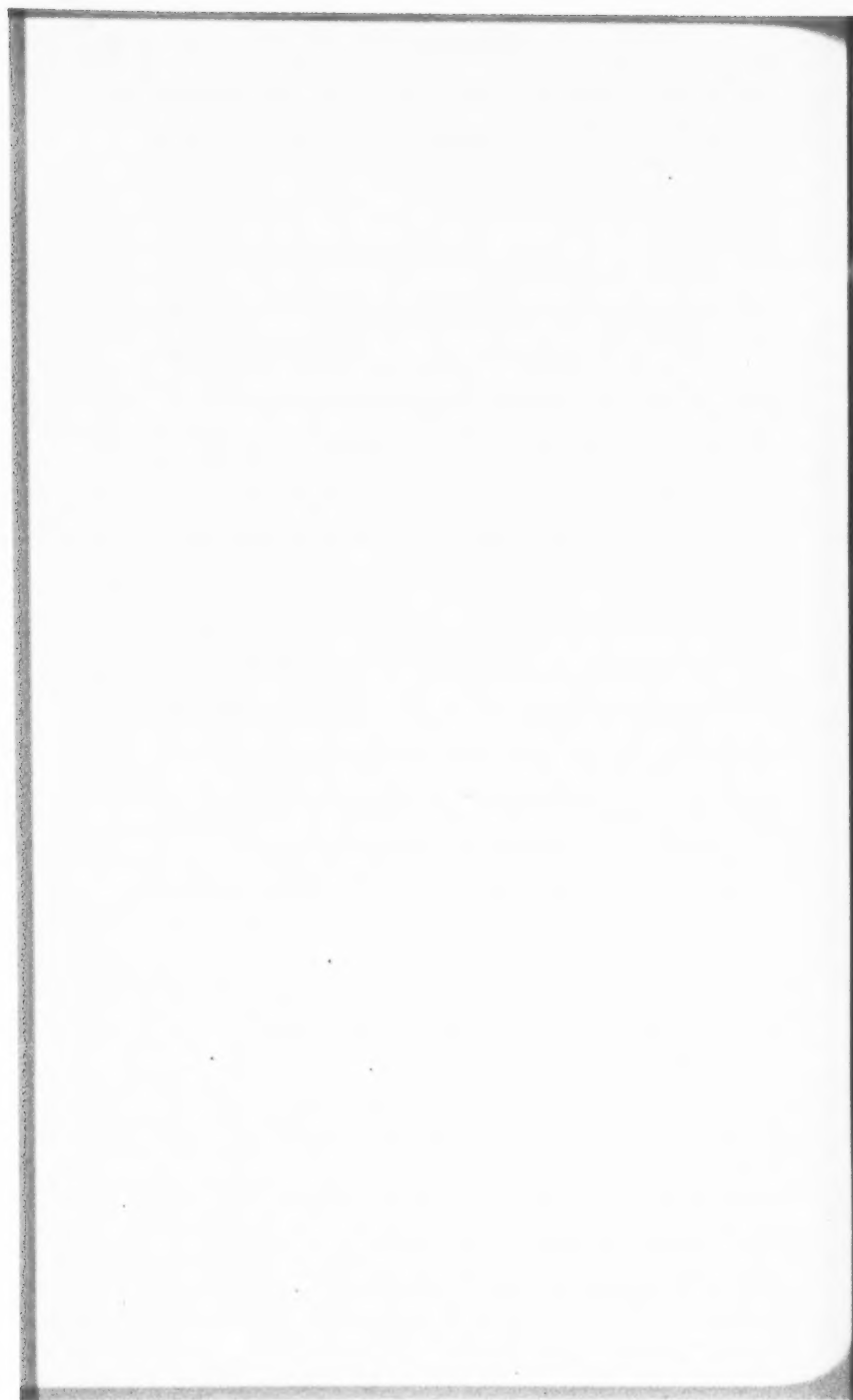
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# RECOVERY OF GASOLINE FROM NATURAL GAS BY COMPRESSION AND REFRIGERATION.

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By W. P. DYKEMA.

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## INTRODUCTION.

In investigating the general problems that relate to the petroleum industry in the United States, the Bureau of Mines has given considerable attention to the recovery of motor fuel from natural gas. Recent developments in gasoline power units and their increasing use have made it imperative that all fractions of petroleum suitable for fuel in this type of engine be conserved. The bureau has issued a number of publications on this subject. Among these are Technical Paper 10, "Liquefield products of natural gas, their properties and uses"; Bulletin 42, "The sampling and examination of mine gases and natural gas"; Technical Paper 87, "Methods of testing natural gas for gasoline content"; Bulletin 120, "Extraction of gasoline from natural gas by the absorption method"; and Bulletin 88, "The condensation of gasoline from natural gas."

This report treats of the compression and refrigeration process for the recovery of gasoline from natural gas from the viewpoint of the practical engineer and business man. Conditions of actual operation and the equipment in use are cited and described so that operators, and others interested, can compare the variations in methods of treating natural gas for its gasoline content in the different fields and also the conditions encountered and the features that control the methods used.

## ACKNOWLEDGMENTS.

The writer heartily acknowledges the valuable assistance and cooperation of the many plant operators and gasoline producers who have cheerfully furnished data on their plants and granted the privilege of plant inspection.

Particular thanks are due to Messrs. W. R. Hamilton, G. L. Goodwin, and D. L. Newton for the many courtesies extended the writer and for much of the information regarding cooling by expanded gas as practiced in the California fields.

Thanks are also due Messrs. W. P. Donovan, Thomas Chestnut, J. C. Gillespie, A. W. Peake, and R. E. Downing for valuable information on practices in the Mid-Continent fields.

## HISTORY OF THE INDUSTRY.

The early history of the manufacture of natural-gas gasoline has been published by the Bureau of Mines <sup>a</sup> in previous papers on the subject. The present practice is the result of the advance developed by a study of the needs of the industry, by improvements in machinery and equipment, and by a better understanding of the thermodynamic and other physical principles involved. A very small proportion of the plants erected have been commercial failures, and most of those which have failed lacked capital to carry them over a period of low prices for gasoline. Many of these plants are still operating the company having been reorganized or bought up by larger corporations, and under present market conditions they show satisfactory returns.

The following table shows the distribution of casing-head gasoline plants and the amount and value of the gasoline produced in the United States in 1915:

TABLE 1.—Gasoline recovered from natural gas and sold in 1915.<sup>a</sup>

State.	Number of plants.	Quantity.	Value.	Average recovery of gasoline per 1,000 cubic feet.
		Gallons.		Gallons.
Oklahoma.....	63	31,665,991	\$2,361,029	3.60
California.....	20	12,835,126	975,397	1.60
West Virginia.....	114	610,853,608	927,079	2.30
Pennsylvania.....	139	5,898,597	569,873	2.75
Ohio.....	50	2,198,715	167,138	2.80
Illinois.....	16	1,035,204	80,049	2.20
Texas.....	1			
New York.....	4			
Louisiana.....	2			
Kansas.....	2	877,424	70,258	1.33
Colorado.....	2			
Kentucky.....	1			
	414	65,364,665	5,150,823	2.57

<sup>a</sup> Northrop, J. D., Mineral Resources U. S. for 1915, U. S. Geol. Survey, 1916, p. 997.

<sup>b</sup> Includes gasoline resulting from natural condensation in gas mains.

In January, 1917, the number of plants in California had increased to 30, with an estimated daily production of more than 60,000 gallons, and the number of plants in Oklahoma to 95, with an estimated daily production of 200,000 gallons.

<sup>a</sup> Allen, I. C., and Burrell, G. A., Liquefied products from natural gas, their properties and uses: Tech. Paper 10, 1912, pp. 4-7; Burrell, G. A., The suitability of natural gas for making gasoline: Tech. Paper 57, 1913, p. 17; Burrell, G. A., Seibert, F. M., and Oberfell, G. G., The condensation of gasoline from natural gas: Bull. 88, 1915, pp. 9, 10; Burrell, G. A., Biddison, P. M., and Oberfell, G. G., Extraction of gasoline from natural gas by absorption methods: Bull. 120, 1917, pp. 11-14.

## **FACTORS TO BE CONSIDERED IN EXAMINING FIELD FROM WHICH GAS IS TO BE TAKEN.**

Before a compression plant can be properly designed to treat natural gas from any given area, a thorough study of the history of the field in general and especially of the sand from which the gas is to be taken should be made, also complete testing to determine the volume and gasoline content of the gas from the area under consideration should be made. This precaution is particularly necessary for a field in which there are no plants in operation that can be studied and used as a precedent.

A knowledge of the history of the field is important in determining the probable life of the wells and the decline in volume of gas produced from year to year. A plant built in California to treat 2,000,000 cubic feet per day has been able to get only half that amount because of the decline in gas production from the wells after the initial rock pressure was relieved, and new wells drilled for oil on the same lease have not thus far brought the quantity of gas up to the plant capacity. Gas from adjoining leases could not be obtained for treatment, and the plant at the time of the writer's visit was running at half capacity, as stated.

In all gas and oil fields in the United States it is found that as the pressure in the wells decreases the gas becomes richer in gasoline content. It is doubtful, however, if the actual total quantity of gasoline vapor from a given well increases, but it seems to be a fact that the amount of gasoline vapors produced declines much less rapidly than either the oil or gas production from a given well or area. This has been found to be practically true of West Virginia and California wells as long as the wells produce oil either under rock pressure or vacuum. In Pennsylvania a small compression plant is treating gas from wells that have long ceased to produce oil and are pumping salt water under vacuums of 26 inches of mercury.

New oil wells producing many million feet of gas under high rock pressure, such as are often brought in, in the Mid-Continent and California fields, are not considered, because gas produced under these conditions of pressure and volume practically never finds its way to compression plants. The gas produced under rock pressures of 400 to 1,500 pounds per square inch contains only comparatively small proportions of the heavier gasoline fractions and comparatively large quantities of the lighter or "wild" fractions, as would be expected from the condition under which the gas is held while in contact with the oil from which it must receive its charge of condensable vapors.

### **CHARACTER OF THE SAND.**

A knowledge of the sand from which the gas is to be produced is a valuable factor in designing a plant; the thickness, texture, or degree of cementation bear directly on the future of the field as a

gas and gasoline producer. Thick sand of close texture indicates long life as an oil producer, and consequently a long life for gasoline production. Loose, uncemented sands, such as are found in California, will not withstand the suction of vacuum pumps, which causes the sand to come in and stop or injure the pumps. This inflow of sand reduces the production of oil and increases the expense of cleaning the wells, so that companies treating their own gas do not permit the vacuums held on walls to exceed 1 to 2 inches of mercury at the casing head. This limitation of vacuums may react in such a way as to make compression plants unprofitable when the oil production has become small and the rock pressure has been completely relieved.

#### CHARACTER OF THE OIL.

Casing-head gas produced with high-gravity oil is almost universally rich in gasoline vapors, except when the gas is produced under extremely high pressures. However, the fact that an oil is of low gravity can not always be depended on to indicate small gasoline content, as has been shown by compression practice in California. As a rule, in California, casing-head gas produced with oil having a gravity of less than 22° B. does not yield enough gasoline for profitable compression. However, in the Salt Lake field, the oil has a gravity of 15° to 17° B. and still the casing-head gas is commercially valuable for its gasoline content. Analyses by the Bureau of Mines<sup>a</sup> of oil from this field shows that it carries exceptionally high proportions of asphaltum (55.3 per cent), but also carries lighter products, ranging up to fractions distilling over at 150° to 200° C., to which are due the gasoline vapors in the gas. The Kern River field, yielding oil with an average gravity of 14° B. has not, so far, produced any gas that is being treated for gasoline.

#### WATER SUPPLY.

Water being essential in all plants making gasoline by compression methods, the supply and the quality of water available should be carefully determined. The cooling coils and the compressor jackets of a plant treating 1,000,000 cubic feet of gas daily at a pressure of 250 pounds per square inch will use 100 to 300 barrels of water a day, depending on the design of the water-cooling system and the temperatures obtained. The loss is accounted for by the evaporation and, in plants where towers or sprays over ponds are used, by water being carried away by the wind. In the oil fields much of the water is so heavily charged with mineral salts as to be almost useless for boilers, gas-engine jackets, and compressor jackets. Such water to be made fit for boiler use must be treated with a so-called "boiler

<sup>a</sup> Allen, I. C., Crossfield, A. S., Jacobs, W. A., and Matthews, R. R., Physical and chemical properties of the petroleum of California: Tech. Paper 74, Bureau of Mines, 1914, p. 13.

compound." For cooling jackets of machines the water must be condensed, otherwise it forms a scale, which interrupts the circulation of water and is dangerous both to machinery and to the operators, and also cuts down the efficiency of the engine and compressor by permitting overheating of the cylinders and of the gas being treated.

#### TRANSPORTATION FACILITIES.

The matter of transportation is of importance, as on it depends, in part, the questions of blending, size and weight of units, plant location, and length of pipe lines. Before a plant is designed, the most economical product should be determined, as it may be that producing the maximum quantity of condensate possible from a given gas will be as profitable as a smaller quantity of a less volatile product. Producing the maximum quantity of condensate from a gas requires high pressures and blending with naphtha as soon as possible after the condensate is precipitated. This requires machines to produce the high pressure, which adds to the cost of installation, and a continual supply of naphtha for blending. If the cost of freight on the naphtha coming to the plant and on the percentage of naphtha in the blended product going back to market, plus the cost of mixing and of losses in blending and handling, is greater than the value of the condensate produced in excess of the quantity that could be produced at a lower pressure without blending, it would be more profitable to produce less condensate of lower vapor tension capable of being shipped as made. For example, a plant in the Mid-Continent field, situated an excessive distance from the nearest refinery from which it could obtain naphtha for blending, finds that using a pressure of 80 pounds from single-stage compressors, and producing 1.8 gallons of condensate with a gravity of 75° to 80° B. and a vapor tension of 5 to 6 pounds, is more profitable than producing 3 gallons of condensate having a gravity of 94° to 98° B. and blending it at or near the plant.

The distance from a railroad will also have a bearing on the cost of erecting a plant. Pipe lines are usually built from the plant to loading racks or blending stations on the railroad. More recent practice seems to favor blending at the compression plant, which necessitates pumping the naphtha to the plant and pumping the blended product back to the loading station through pipe lines. The greatest expense from being at a distance from a railroad, however, is that of hauling equipment and repairs. Machines built in parts too large to handle on the wagons or trucks usually found in oil fields are much more expensive to place than machines shipped in smaller parts. Roads, distances, and the weights of large parts of machines should be considered when a plant is being designed or an estimate of cost figured.

Plate I, A (p. 24), shows two single castings weighing 31,000 pounds each, which were placed in a plant that could be reached only by narrow, steep roads. The trouble and expense of hauling such parts is a factor in plant construction.

The general topography at one compression plant is shown in Plate II, A (p. 24).

#### DISTRIBUTION OF WELLS.

If the wells from which gas is to be taken are distributed over a wide area, it is well to consider the construction of two or more smaller plants rather than one larger plant. One plant visited by the writer treats gas collected over an area of approximately 32 square miles. The extensive pipe-line system required to bring the gas to the plant and return it to the various leases, with the booster stations and equipment necessary to maintain them, makes this plant, in the opinion of the management, more expensive and less efficient than two or three smaller plants would have been.

#### CONDITION OF WELLS.

Before erecting a compression plant in an old field the condition of the casings in the wells from which gas is to be taken should be ascertained. In an old field in Pennsylvania it was found that the casings were badly rusted and allowed excessive quantities of air to enter the lines as soon as a vacuum of more than 1 or 2 inches was placed on them. The wells made an average production of only 1,000 cubic feet of gas a day, so that the expense of recasing would not seem to be warranted.

J. O. Lewis, petroleum technologist of the Bureau of Mines, states that air is often admitted to wells in which the casing has not been properly placed, the air entering through porous strata from other wells which are not being held under vacuums.

#### TESTING NATURAL GAS.

The testing, measuring, and sampling of natural gas for its gasoline content has been described in Bureau of Mines publications<sup>a</sup> by G. A. Burrell and his associates, and will only be taken up briefly by the writer.

Many compression plants are successfully treating gas about which few facts were known before the plant was erected. Much time and expense could have been saved, however, if more had been learned of the physical and chemical characteristics of the gas before the plans

<sup>a</sup> Burrell, G. A., and Jones, G. W., Methods of testing natural gas for gasoline content: Tech. Paper 87, 1916, 23 pp. Burrell, G. A., Selbert, F. M., and Robertson, I. W.: Analysis of natural gas and illuminating gas by fractional distillation at low temperatures and pressures: Tech. Paper 104, 1915, 41 pp. Burrell, G. A., Selbert, F. M., and Oberfell, G. G., The condensation of gasoline from natural gas: Bull. 80, 1915, 106 pp.

of the plant were made and the machinery installed. The investment in a compression plant is large enough to warrant the expense of having all necessary tests, analyses, and measurements of gas made and checked before the plans and details of construction are taken up.

#### SPECIFIC GRAVITY TEST.

Natural gas having a specific gravity of 0.78 (air = 1) and higher is being successfully treated in compression plants. The specific gravity test is useful as an indicator, but the possibility of misleading variations through the presence of other gases, such as air, carbon dioxide, nitrogen and sulphur compounds, in the sample makes this test unreliable if used alone. If an analysis is made of the gas and the specific gravity of the hydrocarbon contents computed, the results are more dependable, but even then are not reliable enough to be used as a basis for final decisions regarding plant construction.

#### SOLUBILITY TEST.

The solubility test described by Burrell and Jones<sup>a</sup> is useful as an arbitrary test, because it is known that gases of a solubility of less than 30 per cent have not been successfully treated in compression plants.

In regard to the following table they state that "in all cases the yield represents the actual amount of gasoline sold after weathering."

*Yield of gasoline from casing-head natural gas by compression method, corresponding to absorption and specific-gravity tests.<sup>a</sup>*

Absorption by oil.	Specific gravity (air=1).	Yield of gasoline, gallons per 1,000 cubic feet of gas.	Absorption by oil.	Specific gravity (air=1).	Yield of gasoline, gallons per 1,000 cubic feet of gas.
<i>Per cent.</i>			<i>Per cent.</i>		
16	0.64	None.	50	1.20	3.00
23	0.83	1.00	48	1.37	3.50
30	0.90	1.75	44	1.38	3.50
37	1.00	2.00	65	1.38	4.00
39	1.03	2.50	54	1.41	5.00
38	1.07	3.00	86	1.46	5.00
54	1.21	3.50			

<sup>a</sup> Burrell, G. A., and Jones, G. W., work cited, p. 10.

It should be stated that both the specific-gravity test and the oil-absorption test fail when applied to residual gas from a gasoline plant because, although the results obtained will indicate high specific gravity and oil absorption, principally because of the presence of large percentages of the hydrocarbon gases, ethane and propane, yet the plant will have extracted the vapors of the liquid paraffins that constitute gasoline.

<sup>a</sup> Burrell, G. A., and Jones, G. W., *Methods of testing natural gas for gasoline content*: Tech. Paper 87, Bureau of Mines, 1916, pp. 7-10.

## FRACTIONAL DISTILLATION.

The Bureau of Mines<sup>a</sup> has developed a technical laboratory test based on a method of freezing out the propane and higher hydrocarbon fractions, which accurately determines the percentage of condensable hydrocarbons, including propane and all other higher members of the hydrocarbon series. This test can be made only in a well-equipped laboratory by experienced gas analysts.

Another method, based on the principle of low temperatures, that was originated by the Smith Emery Co., of Los Angeles, Cal., is essentially as follows: Gas from the casing-head of the well is led through a service meter (see fig. 1) under a pressure of 12 inches of water (devised so as to blow out if that pressure is exceeded) to a copper tube three-fourths of an inch in diameter and 15 feet long, coiled so as to fit into an asbestos insulated container 18 inches deep and 12 inches square. The container is filled with acetone (product of wood distillation) to within 2 or 3 inches of the top. Carbon dioxide snow from steel bottles of carbon dioxide in the liquid state is added to the acetone until a saturated solution is obtained. Complete saturation of the solution is shown when a portion of the snow remains, as snow, on the bottom of the container. The temperature of the acetone is held constant at 70° F. below zero by the carbon dioxide used in this way. Gas is passed through the copper coil, submerged in the acetone bath, until 500 or 1,000 cubic feet, as shown by the meter, has been treated; the coil is then drained into a flask, the quantity of condensate measured, and the gravity tested. If the condensate obtained in this manner is higher in gravity and vapor tension than would be desirable as a plant product, the condensate can be weathered down to the desired product, thus indicating the quantity of condensate of desired gravity which the gas contains. One series of tests made in this manner produced a condensate having a gravity of 90° B., and an absorption plant treating the gas reports a production approximately equal to the results obtained in the original tests of the gas. It requires 2 or 3 bottles of carbon dioxide to conduct this method of testing for one day, and the gas from 6 to 10 wells can be tested in that length of time.

## PORTABLE COMPRESSOR TEST.

It has become the practice, in testing natural gas for its gasoline content to determine its suitability for use in a compression plant, to make actual physical tests with a small portable plant consisting of a compressor, meter, and cooling coils mounted on a wagon or

<sup>a</sup> Burrell, G. A., Seibert, F. M., and Robertson, I. W., Analysis of natural gas and illuminating gas by fractional distillation in a vacuum at low temperatures and pressures: Tech. Paper 104, Bureau of Mines, 1915, 41 pp.

truck. Each well is tested by moving the compressor outfit to a point where gas can be taken from the casing head or from the gas line leading from the well.

The reason for testing each well separately is that even in the same field gas from different wells has widely varying contents of gasoline vapor, and if comparatively dry gas is mixed with gas of greater vapor content, the yield of condensate will be decreased or greater pressure and a lower temperature will be required to precipitate an equal quantity. This point was proved in practice by a plant in California, which, by turning out of its lines the gas from a well making about one-half million cubic feet per day, increased the plant production, no change being made in the pressure or the cooling system.

A portable testing outfit observed in operation by the writer consisted of a tank 12 by 36 inches used as a gas receiver, a 4-horsepower gas engine belted to a 3 by 3½ inch single-acting compressor with a capacity of 3 cubic feet per minute, a single coil of 1-inch pipe of the continuous, return-bend type cooled by submerging in a wooden trough of water and ice, and a double coil, 12 feet long, of 1-inch pipe inside a 2-inch pipe, cooled by expanding the compressed gas through a valve connection between the outside and inside pipes.

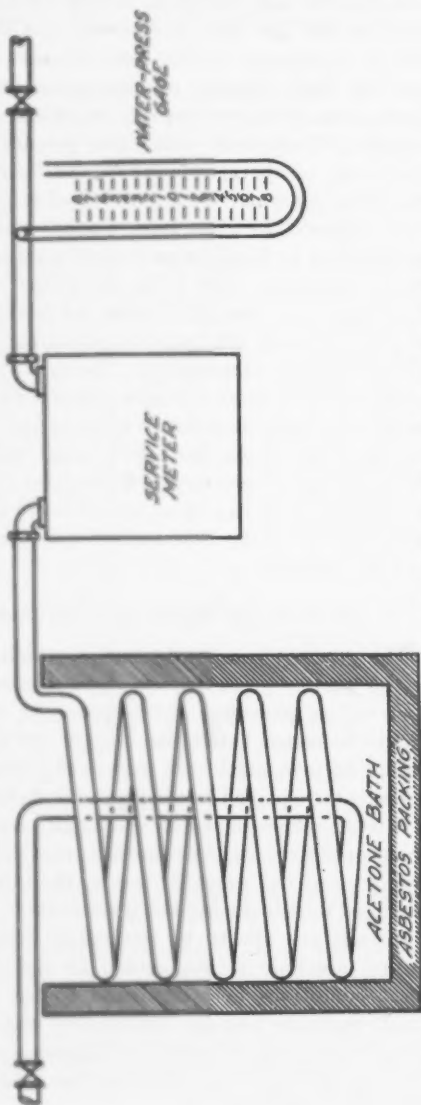


FIGURE 1.—Apparatus for testing natural gas by the acetone and carbon-dioxide method.

The gas was brought from the well line through a  $\frac{1}{2}$ -inch pipe fitted with a water gage for regulating the pressure on the intake receiver; this receiver also served as a trap for heavy oil and dirt. From the receiver the gas was compressed and delivered to the water-cooled coil at a pressure of 250 pounds, the water being cooled with ice. Ice was used because it gave lower and easily regulated temperatures, was more convenient to obtain than a large or continuous supply of fresh cold water, and permitted tests to be run at nearly the same temperature and under more uniform conditions. The gas from the water-cooled coil discharged into the chamber between the outer and the inner pipe of the double coil. At the discharge end of the outer or 2-inch pipe was suspended a 1-inch drip pipe to collect the condensate. Gas from the 2-inch pipe was expanded through the valve into the inner pipe to refrigerate the high-pressure gas flowing through the outside pipe and discharged through a service meter to the atmosphere. Records were kept of temperatures, pressures, and amounts and gravity of condensate produced. The tests were made at night to aid cooling. From time to time specific-gravity tests of gas from individual wells were made and recorded. When the gas from any well dropped noticeably in gravity, a compression test was run on it, and, if found too low in gasoline content for profitable recovery, was turned into the fuel lines of the lease and was not treated.

#### SOURCES OF ERROR IN PORTABLE COMPRESSOR TESTS.

The greatest source of error in making tests with portable outfits is the meters. Service or domestic meters become inaccurate if operated at pressures above those for which they were made, and should be tested before use even at normal pressures, and during use should be protected from excessive pressures by a water or mercury pressure gage placed on the pipe ahead of the meter intake. Pressures of 8 to 12 inches of water are usually used with meters of this type. Some operators use two meters, one on the intake and one on the discharge of the portable tester, the indicated amounts of gas being averaged in calculating the production.

Results are apt to be misleading when gas being treated in the testing machine is not cooled to the same temperature as under plant conditions or compressed to the pressure used in the plant. Small portable testing compressors can be adjusted and operated under conditions so nearly simulating actual plant conditions as to give reliable data on which to base estimates of pressures, temperatures, and recovery.

## MEASURING THE FLOW OF NATURAL GAS.

The following description of the orifice-meter method of gas measurement is from Technical Paper 87<sup>a</sup> of the Bureau of Mines:

## ORIFICE METER.

An instrument known as the orifice meter, for testing small flows of natural gas, is shown in figure 2. This instrument is simple in construction, consisting of a short 2-inch nipple, *b*, with pipe thread on one end and a thin plate disk on the other. The disk carried a 1-inch orifice, *a*, and a hose connection, *c*, for taking the pressure. The meter is especially intended for testing small gas wells and "casing-head" gas from oil wells. As a rule the flow of gas from an oil well is rather small, and it is not advisable to test the flow with a Pitot tube such as is used in testing large gas wells. In using the orifice tester it is necessary to know the specific gravity of the gas in order to obtain the flow.

Before the orifice well tester is attached to the casing head the well should be permitted to blow into the atmosphere until the head of the gas is reduced and the flow has become normal. Then the tester is attached by simply screwing it into the end of a 3-foot length of 2-inch pipe and the pressure is read in inches of water on the siphon gage, *d*. In the table<sup>b</sup> the flow of the well, with values for gas of different gravities, is opposite the gage reading. The orifice in the instrument should be kept dry and uninjured; otherwise the gage reading will not be correct.

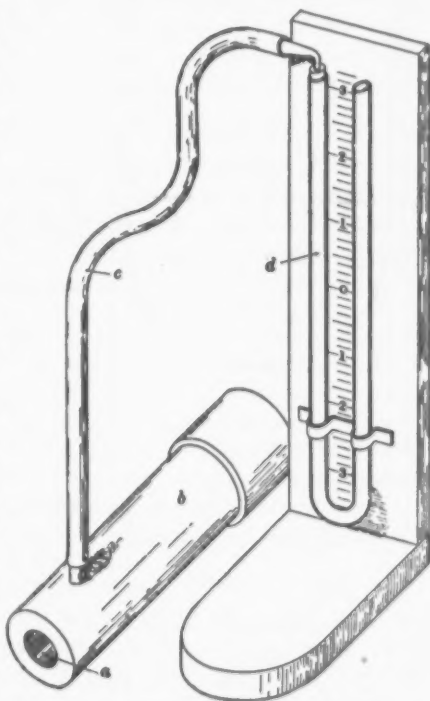


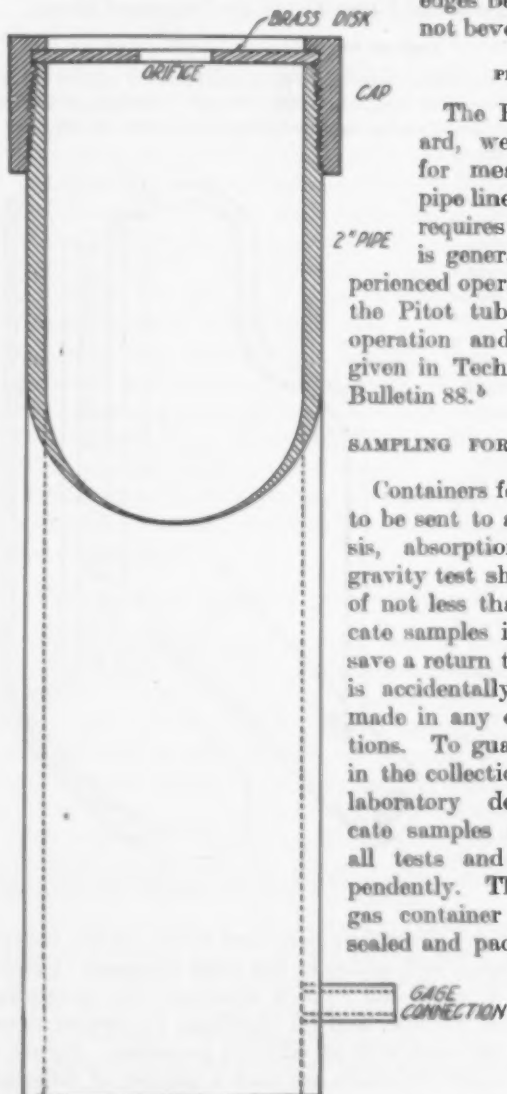
FIGURE 2.—Orifice meter for testing small flows of natural gas.

Beside the thin 1-inch orifice plate described above, orifice meters of this type are equipped with plates of the same thickness ( $\frac{1}{8}$  inch) and with orifices of  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and  $1\frac{1}{4}$  inch diameters for measuring flows of greater or less volume, and for checking, by two or more tests, the flow from the same well at different pressures. Figure 3 shows the design of meters in which are used a number of different sized orifice plates. The brass disks containing the orifices are carefully machined to a thickness of  $\frac{1}{8}$  inch and are made to fit perfectly

<sup>a</sup> Burrell, G. A., and Jones, G. W., Methods of testing natural gas for gasoline content: Bureau of Mines, 1916, pp. 18-20.

<sup>b</sup> See Table 15, p. 115.

between the cap which holds the disk in place and the end of the 2-inch pipe. The orifice in the disk is accurately drilled to size, the edges being made square and not beveled.



#### PITOT-TUBE METHOD.

The Pitot tube is a standard, well-known instrument for measuring gas flows in pipe lines and at gas wells; it requires careful attention and is generally used only by experienced operators. Descriptions of the Pitot tube and its method of operation and tables of flow are given in Technical Paper 87<sup>a</sup> and Bulletin 88.<sup>b</sup>

#### SAMPLING FOR LABORATORY TESTS.

Containers for natural-gas samples to be sent to a laboratory for analysis, absorption test, and specific gravity test should have a capacity of not less than 1 pint, and duplicate samples in two containers may save a return to the field if a sample is accidentally lost or an error is made in any one of the determinations. To guard against errors both in the collection of samples and in laboratory determinations, duplicate samples are often taken and all tests and analyses run independently. The bottle or other gas container should be carefully sealed and packed to avoid leakage from poor stoppers and expansion and contraction of the gas from wide changes in temperature.

FIGURE 3.—Orifice meter in which different sized orifice plates may be used.

<sup>a</sup> Burrell, G. A., and Jones, G. W., Methods of testing natural gas for gasoline content: Bureau of Mines, 1916, pp. 21-34.

<sup>b</sup> Burrell, G. A., Solbert, F. M., and Oberfell, T. G., The condensation of gasoline from natural gas: Bureau of Mines, 1915, pp. 27-46.

## COLLECTING A SAMPLE BY AIR DISPLACEMENT.

Filling a bottle or other container by air displacement is a rapid and convenient method, often used in the field. A small hose is placed over a pet cock in the gas line, the other end being inserted inside of the container. A gentle stream of gas is then allowed to flow into the container for four or five minutes, displacing the air. If the gas is known to be lighter than air it is best to invert the bottle, thus allowing the light gas to displace the heavier air; if the gas is heavier than air, the reverse method is preferable. The bottle is then quickly corked, and sealed by covering the stopper with a coating of warm paraffin. The difficulty with this method is the uncertainty whether all of the air has been displaced by the gas.

## COLLECTING A SAMPLE BY WATER OR MERCURY DISPLACEMENT.

A more accurate method of obtaining a gas sample is by the displacement of water. In this method the bottle is filled with water and inverted beneath the surface of water in a bucket or other convenient receptacle, the hose from the gas line is allowed to discharge below the mouth of the inverted bottle until the water in it has been entirely displaced by the gas. The bottle is then closed or corked while still beneath the surface, and after drying and sealing with paraffin, can be transported without danger of contamination of the contents.

Mercury may be used in the same manner as water, but requires that considerable volumes of this liquid be kept with the sampling apparatus, which adds to its bulk and weight. Displacement of mercury is, however, the most accurate method of filling a container with the gas to be tested, and insures the least possible contamination.

## SAMPLING AND TESTING IN GENERAL.

All tests, measurements, and determinations of natural gas to be used for gasoline manufacture should be checked and proved. Duplicate tests, analyses, and measurements should be made by different persons, if possible. If the duplicate results show variations large enough to be of importance in determining plant capacity, methods, or equipment, a third test should be carried out to determine which results can be trusted and can be used in plant design. Too much importance can not be placed on accurate testing and measuring of gas to be treated for gasoline content, for although during the treatment in a commercial plant many problems arise that can not be foretold, many characteristics of the gas can be determined which have a direct bearing on the pressures and temperatures necessary and the gravity and vapor tension of the condensates produced.

### METHODS OF NATURAL-GAS GASOLINE MANUFACTURE.

Plants treating natural gas for its gasoline content fall under one of three mechanical and physical subdivisions—compression, refrigeration, and absorption, or a combination of these methods. Each division varies widely in mechanical details of both equipment and operation. Gasoline recovery by compression and refrigeration will be discussed in the following pages. Recovery by absorption methods has been described in Bulletin 120.<sup>a</sup>

#### THEORY OF PRECIPITATION.

##### CONDENSATION BY COOLING.

The theory of the precipitation of vapors from natural gas is in a way comparable to that of the precipitation of water vapor from the atmosphere. Water vapor is known to exist in the air at all times in varying proportions, but is invisible unless condensed by cooling. Cooling to a temperature below that at which the air is saturated with the water vapor, it contains causes precipitation in the form of snow, hail, frost, rain, fog, or dew. This fact is also illustrated by beads of water collecting on the outside of a pitcher of ice water, and by the formation of frost on the refrigeration pipes of expansion units, as shown in Plates V, C, VI, and VII (pp. 34 and 36). The air coming in contact with the cold surface of the pitcher or pipes is cooled below its dew point and the moisture which it can no longer hold as vapor condenses as water or frost on the surface. By further cooling of the air more moisture would be condensed, and if cooling were carried far enough practically all of the water vapor could be precipitated without the aid of pressures higher than atmospheric.

##### CONDENSATION BY COMPRESSION.

In plants compressing air it is found that air, after having been made more dense by increase of the pressure and decrease of the volume, deposits moisture at atmospheric temperature, and as the pressure is increased larger percentages of the contained water vapor are precipitated. Hence either high pressures or low temperatures increase the condensation of the water vapor.

In the exceedingly dry atmosphere of the Arizona and Nevada deserts, operating air compressors at a pressure of 100 pounds and cooling the compressed air only to atmospheric temperature always causes precipitation of water, and of lubricating oils from the cylinders, in the air receiver. That all of the moisture in the air is not deposited in the receiver is shown by the fact that in pumps driven by compressed air some moisture freezes in the cylinders and also forms frost on the exhaust outlet.

<sup>a</sup> Burrell, G. A., Biddison, P. M., and Oberfell, G. G., Extraction of gasoline from natural gas by absorption methods: Bull. 120, Bureau of Mines, 1917, 71 pp.

The condensable fractions in natural gas, like those in air, are not visible under ordinary conditions, but at times the sudden release into the atmosphere of gas from confinement under pressure will cause vapors of hydrocarbons to form a mist resembling fog or steam.

In the treatment of natural gas for gasoline recovery the result desired could be accomplished either by compression or refrigeration, but the complex mixture of gases and vapors complicates the problem. Without an exact knowledge of the various members and the proportion of each to the whole, an attempt to calculate the most suitable pressures and temperatures becomes little better than a guess, and the most practical solution is by tests and experiments. According to the law of partial pressures,<sup>a</sup> if gas contains 10 per cent of condensable vapor and is under a pressure of 200 pounds, the condensable 10 per cent has acting upon it a partial pressure of 20 pounds, or 10 per cent of the total pressure. As the proportion of different condensable vapors in the gas becomes smaller through their partial condensation, the partial pressure acting on them also becomes less. The percentage of the gage pressure acting on any one of the gas or vapor constituents varies in proportion to the percentage of volume occupied by that constituent. If the constituent is condensable, condensation will lower its proportion to the volume of uncondensed gas to a point at which the partial pressure acting on it is too small to cause further condensation, leaving a portion of the vapor uncondensed throughout the entire treatment. As the acting pressure becomes lower, condensation tends to cease, but lowering the temperature will cause further condensation. Under constant gage pressures and decreasing temperatures, the largest percentage of the heavier hydrocarbons contained in the gas is recovered, and the losses are confined to the lighter members.

Although all of the condensable vapor and even the true gases can be liquefied by increasing the pressure or reducing the temperature sufficiently, the application of these processes in treating natural gas for gasoline is limited by the commercial considerations. Extremes of either pressure or temperature would yield condensates too volatile for commercial use, also the machinery and other equipment required would be expensive to install and difficult to operate and maintain.

To recover the valuable hydrocarbon fractions that are held as vapors in natural gas, only such pressures and temperatures are necessary as can be obtained by the use of machines and fittings of standard construction and capacities. As the power used to compress the gas heats it, developing power by expanding the compressed gas cools it. By using the cooled gas as a refrigerant, the

<sup>a</sup> Locke, C. E., *Engineering thermodynamics*, 1912, p. 481.

temperature necessary, in conjunction with the pressures obtained, to extract the maximum of commercial condensate can be developed.

The temperature and the pressure that will yield the most profitable results are those that together will recover the largest possible amount of condensates of low vapor tensions and as much of the lighter parts as can be so blended or handled as to conform with legal standards of safety and make a good motor fuel

#### **ABSORPTION THEORY.**

The absorption process for recovering condensate from natural gas is based on an entirely different physical property, that of the solubility of vapors in liquids. In this process the gas is brought into intimate contact with a liquid which dissolves or absorbs the vapors; these vapors are later distilled from the absorbing medium and condensed.

#### **USE OF COMBINATION COMPRESSION AND REFRIGERATION PROCESS.**

As shown above, the fundamental principles of the compression process are compression and cooling of the natural gas to pressures and temperatures at which certain hydrocarbons condense.

Plants of this character are erected to treat casing-head gas from oil sands or from sands closely associated with oil, the gas being brought to the surface either between the casing and tubing of an oil well or with the oil in the tubing. The quantity of gas from each well is usually comparatively small and in some installations as many as 500 or 600 wells are connected with one compression plant of not more than the average capacity.

The dry (treated) gas is, at most plants, used on the oil leases to drive the gas engines of the compression plant, and also for gas and steam engines in pumping and drilling wells. A few compression plants sell the treated gas for commercial use in cities or for manufacturing purposes. The cost of pipe lines and equipment necessary to deliver the small quantities of gas to market would, in general, be excessive. There is seldom much gas left after the quantity necessary for furnishing power has been used.

The value of the gas for heating, power, and lighting is not impaired appreciably by removing the gasoline content. If this gas were not treated, the gasoline would, at most leases, be burned with the gas used for power purposes and practically be wasted as far as serving any useful purpose is concerned.

#### **GAS LEASES.**

Until 1914 practically all the gas being treated for its gasoline content was sold or leased under varying conditions to gasoline producing and marketing companies independent of the companies pro-

ducing the oil. Since that time the oil producing companies, realizing the profits to be made, have constructed compression plants to treat the gas produced with the oil on their leases, and in many instances are now purchasers or lessors of gas from surrounding properties.

Before 1914 gas leases were made mostly on a flat rate, which varied from 2 to 5 cents per 1,000 cubic feet. Often the contract stipulated the vacuum to be held on the oil wells, and specified that any treated gas not used to run the compression plant was to be returned to the lease from which it was taken, the return gas lines to be paid for and laid by the purchasing party. Other leases required that a certain percentage of the gas delivered to the compression plant should be returned, this figure in some instances being as high as 80 per cent.

#### SLIDING-SCALE LEASE.

One lease in Pennsylvania required that 7 cents per 1,000 cubic feet of gas be paid the lessor when the price received by the lessee for gasoline in tank car lots during the preceding month averaged 10 cents per gallon or less, and an advance of 1 cent per 1,000 cubic feet for each advance of 2 cents in the monthly average price of gasoline. The gasoline company had made arrangements to sell the treated gas at 12 cents per 1,000 feet to a company which supplies gas to near-by towns. This was one of the few plants found by the writer that made such disposal of the dry gas.

Such a form of contract, known as the sliding-scale lease, is being used almost entirely at present in the Mid-Continent fields, except that usually the contract stipulates that gas after treatment shall be returned to the lease from which it was originally taken. It also provides that all gas necessary for power to operate gas and water pumps as well as the compressor plant, shall be taken from the treated-gas lines at no cost to the lessor.

At the present time (December, 1916) leases in Oklahoma are being made on what is known as the 4-10 or the 5-10 basis, meaning that the price paid for the privilege of removing and selling the gasoline from the gas is to be 4 cents or 5 cents per 1,000 cubic feet when the price received for the product is 10 cents per gallon, with an increase of 1 cent per 1,000 feet of gas for each additional 2 cents per gallon, as in the Pennsylvania lease previously mentioned. On the 4-10 scale, with gasoline selling at 18 cents per gallon f. o. b. the plant, the price paid for gas would be 8 cents per 1,000 feet.

#### WEAK POINTS OF LEASE.

There seems to be two very weak points in such a form of contract; one is that no account is taken of the present or future quan-

tity of condensate in the gas, and the other is that as the wells and field grow older the percentage of gas returned to the original owner will become progressively less and eventually will become nil. In the Glenn pool, Oklahoma, this point has been reached at some plants.

In one plant, to the knowledge of the writer, the volume of treated gas discharged is at times insufficient to furnish fuel for the engines running the pumps and compressors. This condition is quite usual in older districts such as Sistersville, W. Va., where dry gas is bought to operate the compression plants, or, as at one plant, electric power is purchased and is used to drive the compressors.

As the quantity of gas decreases, the owner will receive less for the gas and have less treated gas returned to him, being forced eventually to buy gas for lease power while the plant operator will, for a long time at least, make the same or a slightly decreased quantity of marketable condensate. It would seem that these conditions should be taken into account in the gas contract.

#### ROYALTY LEASES.

Royalty leases are made and held in some fields, particularly in California, but do not seem to have been generally used throughout the United States.

Before the compression process and its results became well known and understood, gas could commonly be obtained on a royalty of one-eighth of the value of the product marketed, but as the gas producers learned of the treatment and profits, royalties have increased. In California, as much as one-third of the value of the product for gas containing less than 2 gallons of gasoline per 1,000 cubic feet is being paid. The writer is reliably informed of a contract in Oklahoma under which a royalty of one-half is being paid, the gas producing between 4 and 5 gallons of gasoline per 1,000 cubic feet.

#### FACTORS CONTROLLING ROYALTIES AND LEASES.

The royalties and prices that can be paid for gas under lease for gasoline recovery depend on the following conditions:

Wells scattered over a wide area will necessitate an expensive gathering system, including pipe lines and pumps or booster stations, and the cost of operation and upkeep. The quantity of condensate in the gas is vital because the cost of a plant and of plant operation is practically the same for rich or lean gas. If the gas is to be returned to the original owner for use on the lease, the cost, upkeep, and operation of the return or "dry gas" line are to be considered. The distance from a railroad station and the length of pipe lines required to bring the blending naphtha to the plant and transport the product to the station, also the distance from a market, and the source of naphtha supply will have a bearing on production and marketing costs.

The time the lease or contract is to run is also a factor which directly affects the price that is to be paid for gas, as the total cost of installation must be paid out of net receipts by the time the contract expires.

In general, all the factors entering into any manufacturing enterprise must be taken into consideration when the price to be paid for gas leases or royalties is being set.

### **METHODS OF COLLECTING NATURAL GAS.**

The term "casing-head gas," when strictly applied, means gas coming from an oil sand between the casing and the tubing through which the oil is pumped. This term, however, as used in connection with compression plants, has been broadened so as to apply to any gas rising with oil in the tubing, or from flow lines, and to vapors coming from oil in traps or flow tanks.

In eastern practice it is usual to collect only the gas coming up between the casing and tubing in wells which are usually held under high (20 to 26 inches of mercury) vacuums, no attempt being made to collect the gas coming up with the oil in the tubing or the light fractions given off in flow or storage tanks. Oklahoma operators collect gas at the casing head, and in some instances from flow lines and flow tanks. In California an entirely different practice has developed, because of the soft running oil sand in most California fields. The oil and gas from one or more pumping or flowing wells is led into a specially built tank, called a trap. Traps of different designs are so constructed and operated as to permit the separation of the oil and the gas at pressures either above or below atmospheric, as circumstances may require.

#### **USE OF TRAPS.**

Originally traps were invented and designed to work under pressure with the object in view of separating, collecting, and saving the gas and also the oil atomized and mechanically carried with the gas into pipe lines or into the atmosphere; also to hold in the oil the gasoline fractions that would otherwise be volatilized when the pressure on the oil was released; and, further, to allow the oil to absorb as much of the condensable fractions from the gas as possible, thus raising the gravity of the oil and in a measure saving the most desirable fractions of the crude product. As an instance of the use of a trap and its effect on the oil produced, F. B. Tough, of the Bureau of Mines, cites the use of one at a gusher in the Midway, California, field. This well when flowing through a trap produced oil having a gravity of 32.5° B., and when flowing uncontrolled under considerable rock pressure into a collecting sump produced oil, as collected in the sump, with a gravity of 26° B., a gain of over 6° B. resulting from the use of the trap.

Traps are of interest to the casing-head industry principally as separators of oil and gas, or, as developed and used by at least one company, for holding a vacuum on the oil to separate from it such fractions as will distill off at the normal temperature and under a vacuum of 5 to 15 inches of mercury, thus reversing the usual effect and method of trap operation.

#### TRAPS HELD UNDER VACUUMS.

This company has found that the crude oil during transportation and storage and in transfer to the stills of the refinery lost a part of the lighter fractions; also, the temperature used in cooling the still vapors permitted further losses of the lighter fractions, which could be collected as vapor and saved by treating in a compression plant with the gas and vapors produced at the wells.

The method adopted is to relieve the crude oil of its lighter gasoline fractions by holding a vacuum on the trap, as oil is sprayed or flows into it with the casing-head and tubing gases, and treating all the gas and vapors thus obtained in the compression plant. The condensate, which has a gravity of 86° B., is held under a pressure of 10 to 15 pounds and kept cool by shading or insulating the storage tanks until the product is blended with naphtha.

This company has three different production conditions to

meet in the use of traps as follows: (1) Shallow pumping wells which have little or no gas pressure, (2) deep pumping wells with varying pressures of gas, and (3) deep flowing wells which have more or less pressure

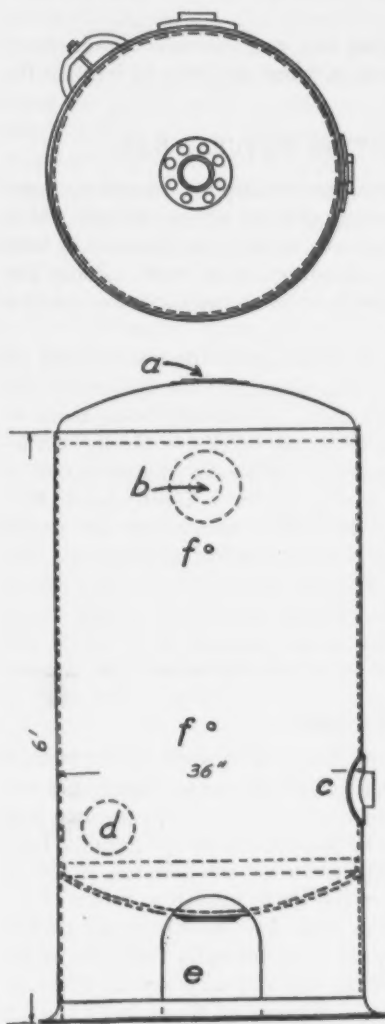


FIGURE 4.—Trap used with shallow pumping wells.  
a, gas outlet; b, gas and oil inlet; c, oil outlet;  
d, manhole; e, clean out; f, holes for gage glass.

on both gas and oil at all times and flow by head. Each condition is met by the use of traps of somewhat different design and operation.

Oil and gas from the shallow pumping wells is carried through flow lines, each controlled by a check valve, to a manifold, from which all the oil and gas goes through one line to a simple trap (fig. 4), the gas drawn out at the top at 5 to 15 inches vacuum to the scrubbers and vacuum pump, the oil being drawn off at a point near the trap bottom, to storage.

Production from deepwells flowing or pumping by "heads," which often builds up pressure in traps and lines by rushes of oil and gas too large for the normal capacity of simple traps and vacuum pumps, is handled by traps of special design, shown in figure 5. Two lines are laid from the well; one from the well tubing carries oil and gas pumped, or flowing together, the other line carries gas from between the casing and tubing. These lines are joined a few feet back of the trap intake, thus forcing all the gas and the oil to flow together into the trap at a point near the top; the gas separates from the oil and flows out at the top of the trap to the vacuum pump. The oil flows out near the trap bottom through a Crane balanced globe valve. The stem of the valve is rigidly connected to a counterbalanced float tank, which rises as the oil in the trap becomes low, closing the valve; fills and pulls the valve open when the flow increases and the oil rises in the trap. The float tank is connected both to the top and the bottom of the trap, as shown in figure 5, by swinging

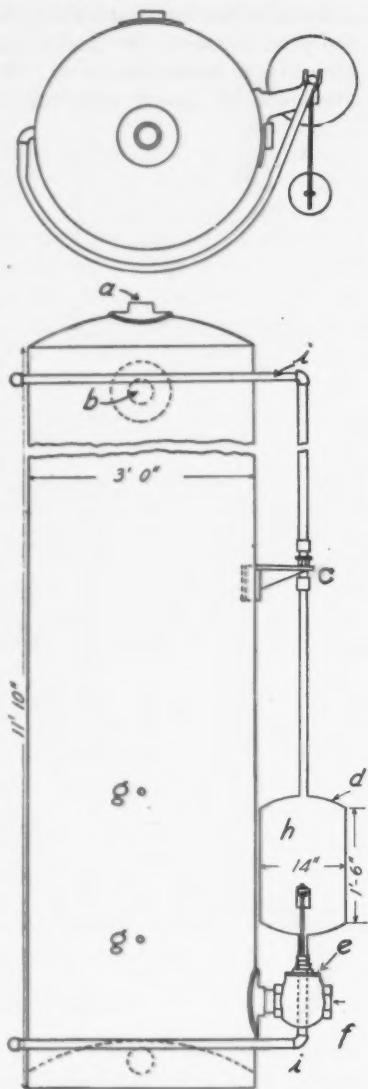


FIGURE 5.—Trap used on flow lines under pressure. *a*, gas outlet; *b*, gas and oil inlet; *c*, ball counter balance; *d*, float tank; *e*, 3-inch Crane balance globe valve; *f*, oil outlet; *g*, holes for gage glass; *h*, chamber; *i*, swinging pipe connections.

pipe connections. As the oil rises and falls in the trap oil flows in and out of the float tank through the bottom pipe connection. The top pipe connects the float tank and the top of the trap and acts only as a pressure equalizer. This trap is of standard design and is marketed by supply companies. The trap shown in figure 6 was

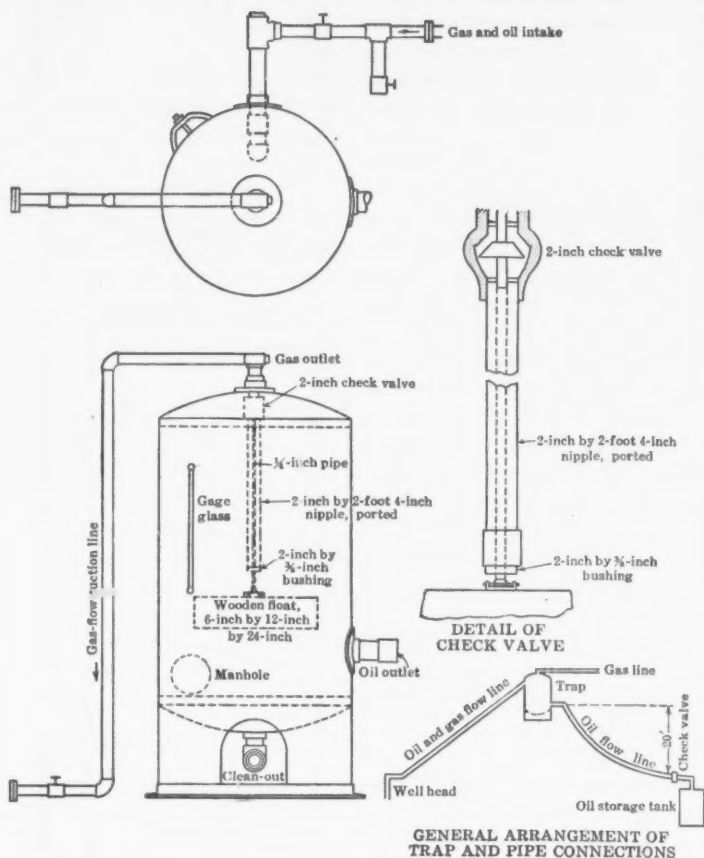


FIGURE 6.—Trap used with flowing wells.

designed by the company using this system of holding vacuums on traps. It is used, particularly with flowing wells, in much the same way as the trap shown in figure 5 and operates automatically.

When the oil level rises above a certain point the gas discharge shuts off entirely. This permits pressure to build up on both intake and discharge oil lines, causing a back pressure on the intake and a greater flow from the discharge; the trap thus clears itself and

returns to normal operation. It is set, as shown in figure 6, above both the well head and the storage tanks, so that when the oil and gas flow is small and a vacuum is built up in the trap the 20-foot drop and the horizontal check valve in the discharge line keep the oil from backing up into the trap, and permitting air to enter the trap and the gas lines.

As an example of loss of the light fractions of oil in storage, a 55,000-barrel storage tank filled with Cushing crude oil is reported by A. N. Kerr, of the Riverside Western Gasoline Co., to have lost by evaporation 9 inches, or 2.5 per cent of its total content, in one year. The loss, without doubt, consisted entirely of the light fractions that make up the gasoline content of the crude oil as it comes from the wells. Much of this loss might have been saved by using vacuum traps or by covering the tank and connecting it to the intake line of a compression plant.

#### FIELDS IN WHICH TRAPS ARE USED.

Traps are used more universally in the California fields than in other fields throughout the United States, because in California oil is sold on a gravity basis, making it desirable and profitable to retain as large a proportion of the light fractions as possible in the oil in order to keep the gravity at a maximum. The general practice, with the exception of the company using vacuum traps, previously mentioned, is to hold pressure on traps to save the light or gasoline fractions.

Plate I, *B*, shows a view of the Starke trap, designed and patented by Dr. Eric A. Starke, of the Standard Oil Co. of California, and used by that company.

Plate I, *C*, shows the McLaughlin compound trap, capacity 800 barrels of oil and 7,000,000 cubic feet of gas per day at 300 pounds pressure, patented by A. C. McLaughlin, of the Kern Trading & Oil Co., on the left, and the McLaughlin single-chamber trap, on the right. Plate III, *A* shows the cone chamber, McLaughlin trap.

Simple cylindrical traps used in the Fullerton field in conjunction with a casing-head gasoline plant are shown in Plate IV, *A*.

#### GATHERING LINES.

Gas from casing heads, tubing, traps, or flow tanks to be treated by compression is led through small (usually 2-inch) lines to a gas main that carries it directly to the plant or to a vacuum or pumping station.

At plants where the gas comes from near-by wells and the gathering lines are short, and it is not desirable to hold a high vacuum on the wells, the vacuum needed to carry the gas through the lines is

often developed in the low-pressure cylinder of the compression plant. By this method a vacuum pump is at many plants unnecessary, and the plant is simplified by requiring one less unit. From this condition the practice varies to plants at which gas is gathered from areas as large as 32 square miles, with 6 and 8 inch mains 7 to 10 miles long, and as many as 30 substations or gas pumps forcing gas through the pipe lines to the compression plant and holding the desired vacuum on the wells. In order to hold high vacuums on the wells from which gas is being drawn it is necessary to have the vacuum pump close to the wells, as it is impossible to maintain a minimum pressure through pipe lines of great length.

In designing a plant or plants to treat gas coming from a large area the number of plants, the number of vacuum and booster stations, the situation of the plant or plants, and the size and length of the pipe lines require careful mathematical calculations to determine the most economical installation. Many plants visited by the writer showed that little or no consideration had been given to these features. Such conditions may be due partly to the use of gas lines laid before the treatment of gas was considered and the reversal of the direction of flow in parts of such lines in order to bring the gas to the plant. The fall in pressure as the gas flows through the pipe lines and the increase in volume caused by the lowered pressure and the increased number of lead lines from wells as the gathering progresses toward the plant, make it essential to use pipes of progressively increasing diameter as the gas approaches the plant.

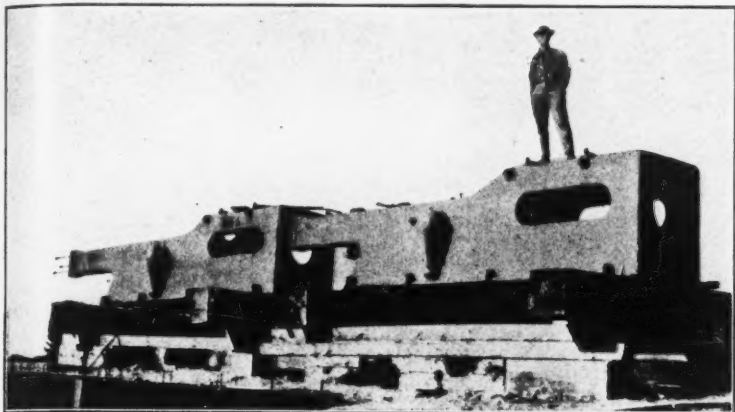
If vacuum pumps and booster stations are placed at points in the gathering lines to reduce the volume and increase the pressure of the gas, the lines leading from such plants may be smaller than those transmitting the gas under lower pressures.

In practice the sizes of gas mains have been determined usually by rule of thumb and bear little relation to the actual volumes, gravities, and pressures of the gas.

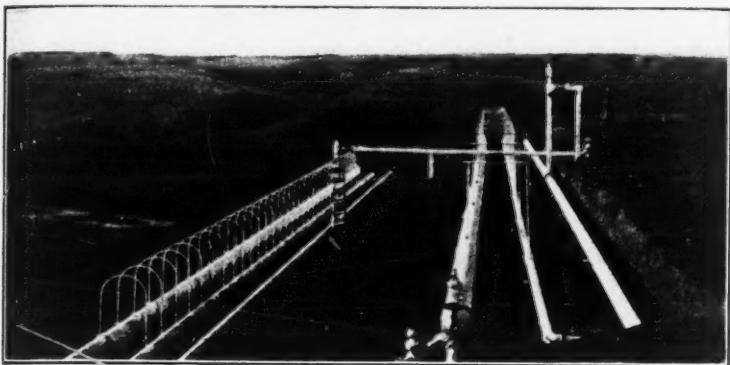
#### FLOW OF GAS IN PIPE LINES.

In designing gathering systems of compression plants to treat or pump gas, the determination of the proper size of pipe to use in lines for carrying a given quantity of gas at known pressures is so essential that the writer believes the formulas covering these points will be of value and interest to those engaged in compressing gas. Formulas and tables on the flow of gas in pipes have been developed by T. R. Weymouth, of Oil City, Pa., and discussed by him in a paper<sup>a</sup> written for and published by the American Society of Mechanical Engineers. These formulas, with that part of the paper that treats of the flow of gas in pipe lines, are given on pages 107 to 112.

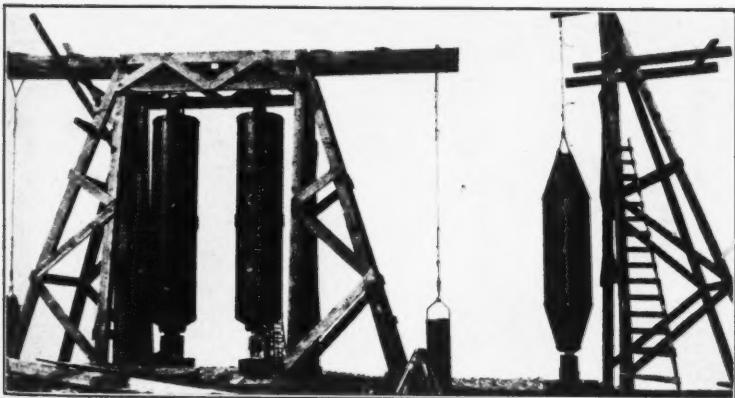
<sup>a</sup> Weymouth, T. R., Problems in natural-gas engineering: Trans. Am. Soc. Mech. Eng., vol. 34, 1912, pp. 193-234.



A. TWO SINGLE ENGINE-BED CASTINGS, WEIGHT 31,000 POUNDS EACH.



B. STARKE TRAP AND CONNECTIONS, USED WITH GUSHERS MAKING LARGE QUANTITIES OF OIL AND GAS.

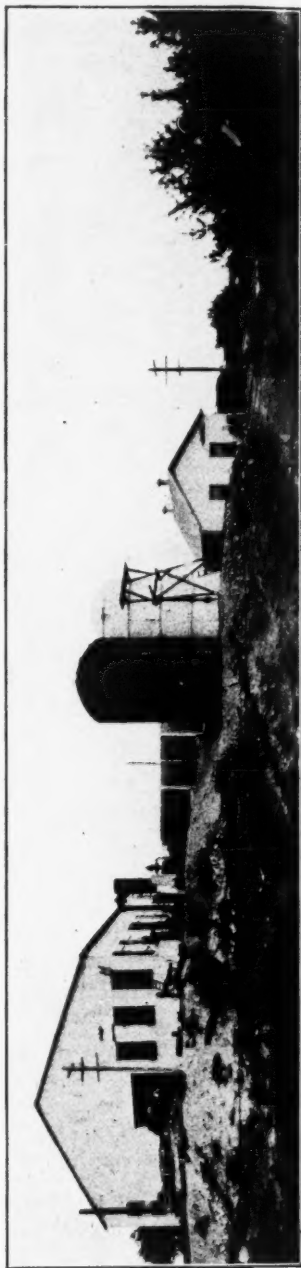


C. McLAUGHLIN COMPOUND TRAP (ON LEFT) AND McLAUGHLIN SINGLE-CHAMBER TRAP (ON RIGHT).



A. VIEW OF COMPRESSION PLANT.

Note tanks at left and cooling tower at right of compressor building.



B. COMPRESSION PLANT, DAILY CAPACITY 7,500,000 FEET, BUILT ON SLOPING GROUND. HAS GRAVITY SYSTEM FOR HANDLING WATER AND CONDENSATE.

**DRIPS AND SCRUBBERS.**

Particles of crude oil are often carried into gas lines from flow lines, flow tanks, and traps; these, with fractions of heavy vapors condensed by changes in temperature and pressure of the gas in the transmission lines would, if not removed, cause trouble in the pipes, damage machines and meters, and discolor the condensate produced in the first-stage accumulators.

**DRIPS.**

Drips are placed at the low points in gas pipe lines to collect and remove condensed moisture and naphtha vapors and crude oil carried into the line, which if permitted to accumulate would restrict the passage and might do considerable damage by being forced through the line as a slug, forming a powerful hammer. The type of drip usually found is constructed of one or two lengths of 6 or 8 inch pipe capped at both ends and connected by a 1 or 2 inch pipe and valve, placed at the lowest point of a downward curve in the gas main. The liquids settling to this point drain into the drip and are either blown out and wasted, or, if the quantity and quality warrant saving, are collected in tanks and, after being distilled or filtered, are used for blending or are sold.

Officials of a plant visited by the writer gave the following data on "line distillates" collected by tank wagons from the gas-line drips:

*Data on distillate collected from gas-line drips.*

	Volume collected, gallons.
August, 1915.....	7,000
November, 1915.....	14,625
January, 1916.....	19,142
March, 1916.....	11,549

Average gravity for an entire year, 55° B.

The figures represent the total quantity of condensate collected during the month named and show the direct effect of atmospheric temperature on the quantity precipitated. The product as collected was discolored, but as all the condensate produced was shipped to the refinery with the crude oil in pipe lines, the color of the line distillate was of no importance.

**SCRUBBERS.**

The term "scrubber," as used in the casing-head gasoline industry, is restricted in its meaning to tanks for settling liquids out of the gas or to tanks fitted with baffles or some form of filter for removing liquids or dust from the gas, and is not used, as in the coke-oven or the artificial gas industries, to designate equipment in which certain constituents are removed by chemical action or absorption in liquids.

The usual form of scrubber is a vertical tank (see Plate IV, B) varying from 3 by 6 feet to 6 by 20 feet in size, with a gas inlet in

the side and near the bottom, the end of the inlet pipe being turned downward or fitted with a baffle, so that the gas discharges toward the bottom. The gas rises through the tank slowly, thus permitting particles of liquid or dust to settle.

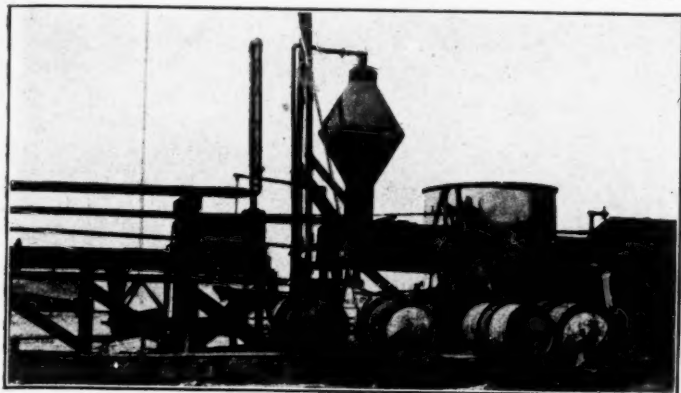
Scrubbers of the filter type are of the same size and form as the settling tank, but have perforated horizontal partitions on which are various filtering mediums such as moss, hay, or sponge. When the filtering medium becomes saturated or dirty it is removed and burned, if moss or hay, or is cleaned and replaced, if sponge is used. Scrubbers are always put in pipe lines ahead of compression machines, meters, and the pump. They also serve as intake receivers for the gas pump or the compressor, one tank, 3 by 6 feet in size, being used on the intake of each machine, or a tank of corresponding larger capacity for the entire plant intake.

#### VACUUM STATIONS.

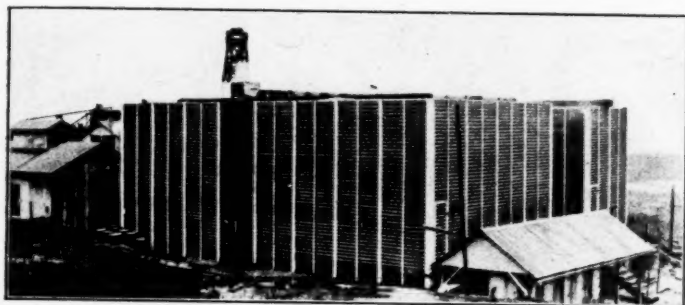
The number and the situation of vacuum pumps and booster stations on a gas-gathering system depend on the vacuum to be held on the wells, and the length and size of the pipe lines through which the gas is to be forced. When it is desired to hold the vacuum on the wells at the maximum, as is usual in the eastern fields, the vacuum pump must be placed near the wells, because friction, and often pipeline leakage, reduces the suction on the well. The most common vacuum-pump installation consists of a gas engine of 35 to 70 horsepower belted to a duplex pump having cylinders varying between 10 by 17 inches and 20 by 20 inches. Intake pressures vary between 14 and 26 inch vacuums, and discharge pressures between a vacuum of 5 inches and a gas pressure of 5 pounds.

The "booster," if used, is to be placed in the same building as the vacuum pump. Power is developed by a 25 to 70 horsepower gas engine, either belted or direct connected to a compressor used to increase the pressure and force the gas through field lines either to another pump and booster or to the main compression plant. Compressors used in this way take gas directly from the discharge of the vacuum pump, usually holding a light (zero to 5-inch) vacuum at the intake, thus relieving the pump from working against high discharge pressures. Gas pumps are built too light to pump gas against pressures exceeding 10 pounds and usually discharge at nearly zero gage pressure. Compressors used as boosters deliver gas to the lines at pressures of 20 to 40 pounds and at any temperature incident to the compression.

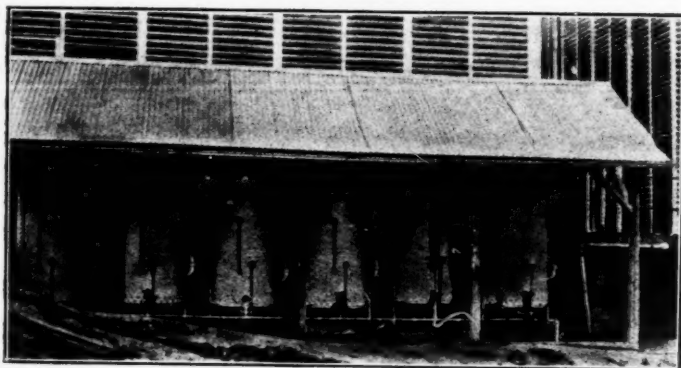
Keeping gas under positive pressure through as much of the gathering system as possible tends to prevent air being drawn in and contaminating the gas, although any pressure high enough to keep air from leaking in also permits some gas, charged with condensable



A. McLAUGHLIN CONE CHAMBER TRAP.

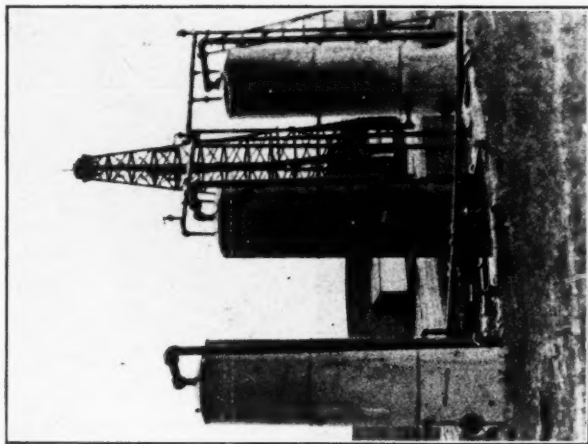


B. COOLING TANKS SET TO TAKE ADVANTAGE OF SLOPING GROUND AND OPEN-AIR CIRCULATION.

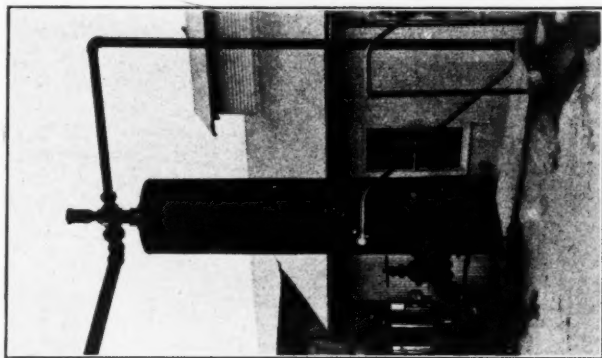


C. HIGH-PRESSURE AND LOW-PRESSURE ACCUMULATOR TANKS.

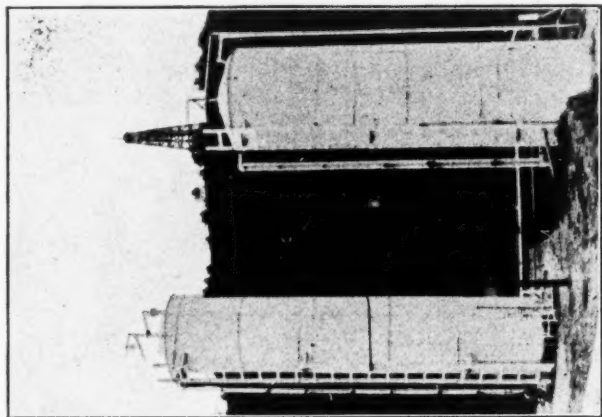
Note heavy double-riveted construction of high-pressure tanks.



A. SIMPLE CYLINDRICAL TRAPS.



B. INTAKE RECEIVER AT 1,000,000-FOOT PLANT.



C. "MAKE" AND STORAGE TANKS, SHOWING PIPING AND PRESSURE VALVES.

vapors, to escape. Air in gas cuts down the volume of gas treated, necessitates the use of higher pressures to precipitate the condensate, and carries varying proportions of water vapor which condense with the gasoline. Another advantage of transmitting gas under pressure is that pipe-line capacities are increased, making possible the use of pipe of smaller diameter in the gathering system.

There is a decided tendency at the present time in favor of welded joints in pipe lines to carry gas either at vacuums or positive pressures. It is claimed that lines with such joints cost less in upkeep and repairs and can be maintained practically gas tight.

#### SITUATION OF PLANT.

Factors entering into the problem of the best situation for a compression plant to treat gas from a given area are so numerous and varied that no rules which would apply even in a general way to all conditions found in oil fields can be given.

The most important factors and those which will have the greatest weight in determining the most practicable situation for a plant are: Water supply, transportation facilities, and the length of gathering lines and return dry-gas lines necessary. In eastern fields an ample water supply can usually be easily obtained from a creek, river, or well, and causes little concern to plant operators, but in the Mid-Continent and the western gas-producing areas the question of water supply often becomes of major importance.

In the California fields some plants pay as high as  $3\frac{1}{2}$  cents per barrel for water, which has to be treated or condensed before it is fit for use in boilers or jackets. Other plants pump their water for distances of several miles, and at these the cost of installation, operation, and upkeep of the pumps and the pipe lines make the cost of water an important item. One California plant is using water separated from the oil in a dehydration plant on the cooling coils, and is distilling and condensing water for jacket use, all other sources of water having practically failed.

It is obvious that the nearer the plant is to the center of gas production the smaller will be the size of the pipe lines and the amount of power required to conduct the gas to the plant. However, other factors, such as water-supply and transportation facilities may affect the choice of a site. The plant should be so situated as to suit best all conditions, each being considered in regard to the others. Compression plants are often built on a hillside, advantage being taken of the natural slope to install a gravity system of handling the water and the condensate. The water, being drained from all points of use to one pond or basin, requires only one pumping unit to return it to the top of the towers or the storage tank above the plant, from which it is drawn for all purposes. Plates II, B, and III, B,

show plants using a gravity system for handling water and condensate. In this system the condensate can be run by gravity from accumulators and "make" tanks to storage and blending tanks. The accumulators do not have to be set in pits or cellars; this is a decided advantage, because gasoline vapor may collect in such pits, unless they are thoroughly ventilated, in sufficient quantity to form an explosive or asphyxiating atmosphere and endanger the safety of the plant and the men. At plants visited by the writer three men have lost their lives by suffocation in pits filled with gasoline fumes. Some plants have a rule that a man before going into a cellar containing accumulator tanks shall notify another workman, or, if there is known danger from leaks, men shall work only in pairs or within calling distance of each other. Plants are often built on a hill or rise because of the better ventilation and the cooling effect on water towers and coils.

#### DATA ON PLANT PRACTICE.

A number of tables compiled from data taken at each of the plants listed in Table 2 or given to the writer by owners or by officials of the various companies are presented herein.

In Table 2, column 1 shows the field in which each of the plants is situated. Each plant is given a number, shown in column 2, which it retains throughout all tables and discussions following. Capacity and production data of these plants are shown in columns 3 to 5. Column 3 shows the quantity of gas treated, in thousands of cubic feet, as estimated by plant operators, or computed from meter readings, or from the compressor displacement and the number of revolutions, or the pipe-line capacities at measured pressures. Column 4 represents the production, after weathering, of unblended gasoline, and is approximately the quantity of condensate sent to market. Tank-car outage (or loss in transit) has not been deducted, as that factor varies widely with the distance traveled by the cars and the temperatures encountered during the shipment. Column 5 shows the number of gallons of condensate produced from each thousand cubic feet of gas treated, based on the plant capacity and the total product sold, as indicated in column 4. The gravity in degrees Baumé, as given in column 6, is determined from the plant product as a whole, before blending, or computed from the gravity of the blend, the quantity and the gravity of the blending stock used being known.

## DATA ON PLANT PRACTICE.

29

TABLE 2.—Data showing situation, capacity, and output of the plants visited, and the gravity of the product.

Field where plant is situated.	Plant No.	Capacity (in 1,000 cubic feet).	Daily production, gallons.	Gallons produced per 1,000 cubic feet of gas.	Gravity, °B.
<b>California fields:</b>					
Fullerton.....	1	1,000	600	0.60	68
Do.....	2	350	1,200	3.40	76
Do.....	3	450	700	1.50	78-80
Do.....	4	1,250	1,600	1.30	72-74
Do.....	5	5,000	1,200	.24	
Santa Maria.....	6	2,500	5,500	2.20	81
Do.....	7	7,500	7,500	1.00	70
Do.....	8	500	500-600	1.00	70
Do.....	9	1,000	2,500	2.50	80
Do.....	10	750	1,200	1.60	74
Do.....	11	1,500	3,000	2.00	79
Do.....	12	700	1,500	2.10	81
Do.....	13	(a)			
Ventura.....	14	1,000	2,000	2.00	86
Do.....	15		800		
Salt Lake.....	16	250	325	1.30	65
Do.....	17	750	810	1.10	60-65
Do.....	18		1,500		68-70
Midway.....	b 19	1,800	1,400	.78	68
Do.....	20	1,500	1,400	.90	67
Do.....	b 21	1,000	700	.70	80
<b>Eastern fields:</b>					
Bradford, Pa.....	22	600	1,200	2.00	96
Sistersville, W. Va.....	23	200	800	4.00	88
Do.....	24	375	1,500	4.00	90
Do.....	c 25				
Do.....	26	500			88
Southern Illinois.....	27	750	500	.75	83
Do.....	28		200		83
Do.....	29				
<b>Mid-Continent fields:</b>					
Glenn pool.....	30	750	3,000	d 4.00	
Do.....	31	375	1,500	d 4.00	77
Do.....	32	3,000	22,500	7.40	84
Do.....	33	1,800	9,000	5.00	82
Do.....	34	750	6,250	7.00	82
Do.....	35	350	1,590	4.52	96
Do.....	36	2,000	2,310	1.10	78
Do.....	37	400	2,565	6.40	85
Do.....	38	750	6,055	6.70	
Do.....	39	200	510	2.50	
Do.....	40	250	600	2.40	
Do.....	41	350	550	1.60	
South Glenn pool.....	42	450	1,200	2.40	
Morris.....	43	300	300	1.00	
Do.....	44	500	1,850	3.60	
Beggs.....	45	350	710	2.10	
Muskogee.....	46	300	730	2.44	
Do.....	47	350	300	.85	
Glenn pool.....	48	1,200	2,380	2.00	
Cushing pool.....	49	2,000	2,810	1.40	
Cleveland.....	50	1,200	2,000	1.67	
Muskogee.....	51	250	925	3.70	
Do.....	52	250	500	e 2.00	
Cushing.....	53				
Nowata.....	54	f 2,250	10,000	4.00	
Do.....	55	1,250	1,600	1.70	
Do.....	56	380	600	1.60	
Do.....	57	830	1,500	1.60	
Morris.....	58	2,000	3,000	1.50	
Do.....	59	400	725	1.90	
Nowata.....	60	1,000	1,900	1.90	
Do.....	61	500	1,100	2.20	
Do.....	62	280	420	1.50	
Glenn pool.....	63	487	1,948	g 4.00	
Do.....	64	515	2,062	g 4.00	

a Plant not in commission.

b Plant capacities doubled and expansion sets installed or improved; product per 1,000 feet of gas increased.

c At this plant gas is compressed in one stage to a pressure of 150 pounds.

d Estimated.

e Eight per cent water with high and low pressure product.

f Thirty per cent air.

g Volume of gas estimated from product at 4 gallons per 1,000 cubic feet, a conservative estimate for gas from wells in the Glenn pool.

TABLE 2.—*Data showing situation, capacity, and output of the plants visited, and the gravity of the product—Continued.*

Field where plant is situated.	Plant No.	Capacity (in 1,000 cubic feet).	Daily production, gallons.	Gallons produced per 1,000 cubic feet of gas.	Gravity, °B.
Mid-Continent fields—Continued.					
Glenn pool.....	65	90	350	4.00	
Do.....	66	90	351	4.00	
Do.....	67	98	394	4.00	
Do.....	68	136	545	4.00	
Do.....	69	125	500	4.00	
Do.....	70	141	566	4.00	
Do.....	71	712	2,864	4.00	
Do.....	72	375	1,500	4.00	
Do.....	73	466	1,864	4.00	
Do.....	74	124	496	4.00	
Do.....	75	173	690	4.00	
Caddo (Louisiana).....	76	2,000	3,000	1.80	79
Do.....	77	400	640	1.60	79
De Soto (Louisiana).....	78	45	350	7.00	73
Caddo (Louisiana).....	79	250	1,050	4.20	6.80
New Jersey: Refinery.....	80	1,750	5,400	3.09	76-93

<sup>a</sup> Volume of gas estimated from product at 4 gallons per 1,000 cubic feet, a conservative estimate for gas from wells in the Glenn pool.

<sup>b</sup> 50 per cent of this product was from low-pressure cylinder and 50 per cent from high-pressure cylinder and expansion coil.

In the following pages the writer has endeavored to describe as nearly as possible the treatment of natural gas in the recovery of gasoline by the compression process, and the mechanical units used.

The controlling functions of low and high pressure compression units of the plants studied by the writer are shown in Table 3.

Plant 2 is described in detail in pages 63 to 65. Plant 5 is a gas-pumping station, the condensate collected in cooling the gas before transmission is noted as production in Table 2 (p. 29). This gas after transmission through the pipe lines is treated in an absorption plant. Plant 10 uses three-stage compression. Plant 25 uses one-stage compression, compressing to a pressure of 150 pounds. Plant 80 is a refinery at which uncondensed still vapors are treated by compression; this plant is described in detail in later paragraphs.

#### PLANT INTAKE.

Table 3 shows that the temperature and the pressure at the plant intakes vary widely. The pressures tabulated as pressure at plant intake represent the pressure shown at the suction of the first-stage compression cylinder. Vacuum pumps, even if installed at the plant, are considered as part of the gathering system, and vacuum at plants where the compression cylinders are used to hold vacuum on the gathering system is taken as part of the compression operation and not as a part of the gathering system to which it rightly belongs. The intake pressures used vary from 18-inch vacuum to 5-pound pressure, and the temperatures from 60° to 125° F., the average

pressure being approximately that of the atmosphere, and the average temperature  $80^{\circ}$  F. The temperature of  $60^{\circ}$  F. noted above was recorded at plant 1, where the gas is cooled in coils placed in a water tower before it is compressed, and the temperature of  $125^{\circ}$  F. at a plant where a vacuum-pump discharge is used as the first-stage suction without cooling.

#### PRECOOLING.

Cooling the gas before it enters the first stage of compression, although not generally practiced, has distinct advantages. Reducing the temperature of the gas decreases the volume, the intake pressure remaining the same, so that more gas is taken into the compressor cylinder at each stroke, thus increasing the efficiency.

In warm climates plants having gathering lines, traps, and scrubbers exposed to the sun, which may heat the incoming gas to temperatures higher than  $110^{\circ}$  F., or having gas pumps and "booster" compressors in the gathering systems with no cooling coils after such units and before the plant intake, can by installing coils or other cooling apparatus increase both the plant efficiency and the carrying capacity of the pipe lines. Cooling the intake gas  $30^{\circ}$  or  $60^{\circ}$  F. will increase the quantity treated by a compression unit 5 to 10 per cent and lower proportionally the temperature of the gas discharged from the compressor.. (See Table 11, p. 112.)

A plant in California lowered the temperature of the gas about  $40^{\circ}$  F. by passing it through a water-cooled coil ahead of the low-pressure intake. On the day of the writer's visit 1,250,000 cubic feet of gas was handled and the temperature lowered from  $114^{\circ}$  to  $74^{\circ}$  F. The coil used consisted of twelve 3-inch pipes 25 feet long, in 10-inch headers, placed horizontally in the cooling tower below the high and the low pressure gas coils.

A plant in Louisiana uses water cooling ahead of the vacuum pump and the first-stage compression intakes. In gas transmission gas piped to market is always cooled before being permitted to enter the mains, in order to increase the capacity of the line and to precipitate as much condensate and water vapor as possible.

TABLE 3.—Data on compression.

Plant No.	Low-stage compression.						High-stage compression.						
	Intake.		Discharge.		Cooling coils.		Compressor discharge.		Rated horse-power.	Cooling coils.			
	Pressure, inches of vacuum.	Temperature, °F.	Pressure, pounds per square inch.	Temperature, °F.	Total surface area, square feet.	Square feet per horse-power.	Square feet per 1,000 feet of gas treated.	Discharge temperature, °F.		Total surface area, square feet.	Square feet per horse-power.	Square feet per 1,000 feet of gas treated.	
1	10-15	60	40	(a)	500	0.500	60	220		500		0.500	60
2	11		37										
3	2		55		220	4.00	68	250	55	220	4.00	490	68
4	3-10	72	50	240	587	3.91	470	240	150	587	3.91	470	70
5	0-1.4	78	54	200	1,225		500	250	190	1,225		500	70
6	6	80	38	245	3,600	4.00	481	250	900	3,600			78
7	10	80	25		475	2.97		200	160	475	2.97		
8	7		12		975								
9			12										
10	2-5	65	36	240	585	2.43	390	190	240	585	2.43	390	72
11	5	65	43		450	2.80		250	160	450	2.80	640	70
12	(c)		40	200	504	3.05	504	250	165	504	3.05	504	70
13	9	(b)	40		167	3.35	670	240	50	167	3.35	670	70
14	13	(b)	35		420	2.95	380	235	150	420	2.95	380	
15	6	68-80	35	250	660	2.87	370	275	262	660	2.87	370	70-80
16	247		50						247				
17	150	78	50	250	528	3.50	528	250	150	528	3.50	528	68
18	90		40	180	146	1.63	244	300	90	292	3.26	488	60
19	17		15		100	5.90	500	90	17	150	8.80	750	
20	35		10					100	35				
21	12		25					120					
22	5		50		(b)			300	100	350	3.50	480	70
23	5		50										
24	5		50		(a)			300	25	190	7.60		70
25	12		50		375	3.60	501	270	105	882	8.42	1.20	
26	(b)		50		220	4.00	590	250	55	220	4.00	590	
27	350	(b)	50	160	880	2.51	292	250	350	880	2.51	292	
28	5	(b)	40		670	2.40	370	225	280	670	2.40	370	96
29	3	(b)	45		733	4.90	.975	215	150	733	4.90	1.68	(b)
30	5		45		210	4.20	.600	250	50	1,260	8.40	1.20	
31	6		45		840	3.50	.420	250	240	420	5.25	1.20	
32	0-5		45		210	2.47	.620	245	85	1,260	4.94	1.40	

38	150	5	45	315	2.10	420	250	150	380	2.56	50
39	160	0	45	780	4.85	650	250	160	1,470	9.20	1.23
50	55	6	45	147	2.70	590	250	55	286	5.20	1.14
51	50	9	25	210	4.20	840	250	50	610	12.4	2.44
52	50	5	45	610	1.35	270	250	450	975	2.16	.43
53	50	8	40	505	3.36	404	275	150	505	3.36	.404
54	450	0	48	505	4.80	1.36	250	150	505	4.80	1.36
55	150	4-8	40	505	4.80	1.01	300	105	505	4.80	1.01
56	105	4-8	40	840	5.9	1.88	250	175	840	4.80	1.01
57	175	4-5	80	1,760	11.80	1.47	(j)				
58	300	4-5	90	590	11.80	13.00	(j)				
59	50	0-2	75	200	11.80	50	(j)				
60	50	0	50	225	2.42	189	250	52	252	4.84	1.10
61	52	0	43	253			160	225	566		.378
62		0									70

*j* Varied from positive pressure of 5 pounds to vacuum of 5 inches.

*g* Pounds, positive pressure.

*h* No coils used between low-stage and high-stage compression.

*i* At coil intake.

*j* Single-stage plant, no blend ng.

*a* Ammonia process used from this point on.

*b* Atmospheric.

*c* Low-pressure cylinder; three stages used.

*d* Intermediate cylinder.

*e* 0.920, low compression; 0.480, intermediate compression.

**FIRST-STAGE PRESSURES AND TEMPERATURES USED.**

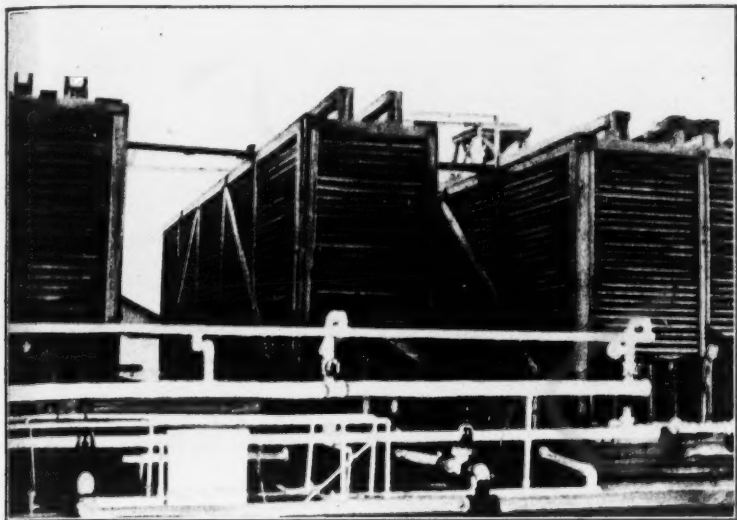
In plants using two-stage compression, the average pressure developed by the first stage is between 40 and 50 pounds per square inch; the temperature rises to between 200° and 250° F., depending on the temperature of the gas at the compressor intake and the number of compressions developed.

The increase in temperature of the gas from compression is a function of the power used to raise the pressure to the desired point. The power used depends on the number of compressions through which the gas is forced between its initial and final volume. As the amount of power actually expended, and not the initial and the final pressure, determines the rise in temperature the temperature increase due to a given number of compressions should be the same. If the intake temperatures of the high and the low stage compressor cylinders are equal, the final, or discharge, temperature of both cylinders of a two-stage compressor or of two single-stage machines acting as a high and a low stage unit should be the same, provided they are of equal horsepower and working properly and under uniform conditions. This is found to be approximately true in plant practice, as is shown by the temperatures of the compressor discharges given in Table 3.

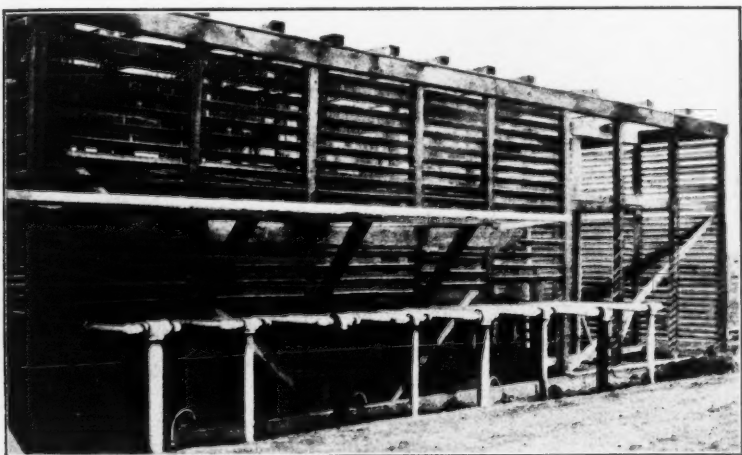
The line carrying the compressed gas from either the high or the low stage cylinder is usually fitted with safety valves set to pop at pressures of 5 to 20 pounds above the desired pressure in order to protect the machine in case a valve farther along in the system may have been left closed or a pipe in the coils or other units in the gas circuit should become stopped or clogged, thus causing pressure to build up throughout the system. In plants using expansion engines this condition may occur at any time through the engine valves freezing, thus stopping the usual discharge.

**ATMOSPHERIC COOLING.**

The compressed gas discharged from the compressor is carried through an oil separator, placed just ahead of the cooling coils, which traps any lubricating oil vaporized in the cylinders or carried mechanically with the gas, the oil being condensed by the time the gas reaches the trap. Cooling to this point is effected by radiation to the atmosphere surrounding the gas discharge pipe and to the jacket water around the compressor cylinder. Some operators are employing air cooling extensively in order to save water, the practice being to use a much larger pipe, exposed as far as possible to the atmosphere, for conveying the hot gas from the compressor discharge to the water coils, thereby reducing the speed of flow and so increasing the time of transmission that the temperature of the gas is materially lowered. One plant with a daily capacity of 1,250,000 feet and using 6-inch pipe to carry both high and low



A. COOLING TOWERS, MANIFOLD INTAKE, AND DISCHARGE LINES AND HEADERS.



B. HIGH AND LOW PRESSURE COILS WITH INTAKES ALTERNATING.



pressure gas to the coils, reduces the temperature between the compressor discharge and the coil intake  $80^{\circ}$  ( $240^{\circ}$  to  $160^{\circ}$  F.) even in warm weather. In cold weather the reduction is greater.

Methods of air cooling are being rapidly developed and installed in districts where water is scarce and expensive, or the supply uncertain.

#### COOLING COILS.

In the eastern fields the cooling coils are generally of the continuous, submerged type, consisting of a 2-inch pipe 20 feet long, submerged in a tank of water. The total length of the coil varies between 300 and 500 feet, and the radiating area is 0.6 to 0.7 square feet per 1,000 cubic feet of plant capacity, and 2 to 5 square feet per horsepower used in compression. A continuous flow of water through the tank cools the gas to approximately the same temperature as the water.

In western and Mid-Continent practice a different method has been developed. Because of the difficulty of obtaining a continuous supply of cool water, it is necessary to use the same water over and over again in a closed circuit, the water being cooled in towers or in sprays over the principal storage pond or basin.

#### COOLING WATER BY EVAPORATION AND RADIATION.

Water exposed to air cools in two ways—by radiation, as long as the water is warmer than the air, and by evaporation.<sup>a</sup> To obtain the greatest cooling effect the water must be so exposed to the air as to present the greatest possible surface. At some plants the water is cooled in towers (Pl. V, A) by means of sprays, or by permitting the water to fall in small streams on wire netting or screens, usually placed above the coils, thus atomizing the water and presenting a large surface to the air. The falling spray is often collected by V-shaped troughs that are placed a few inches above the top pipe of the coil and direct the flow of cooled water over the entire series of pipes. The water, dripping from the lowest pipe of the coil, is collected in a shallow basin beneath the coil and the tower, pumped to the top of the tower, and used again.

Plates VI and VII show views of a compression plant and the general arrangement of towers, compressor building, and storage tanks.

Some plants use a spray over a pond. The water is collected beneath the coils and conducted to a cistern from which it is pumped through upward sprayers placed over the storage pond, thence it is again pumped over the coils. The finely divided particles of water in the spray are cooled by radiation and evaporation while falling into the main body of water below. This system, although producing

<sup>a</sup> Hausbrand, E., *Evaporating, condensing, and cooling apparatus*, 1903, 400 pp.

satisfactory temperatures, wastes more water than the tower installations, more being carried away mechanically by the wind; there is also a waste due to seepage, if the pond is of earth. The surface of the water in the pond is often exposed to the heat of the sun, which warms the body of water after cooling and before use over the coils. The sun has a decided effect in raising the temperature of the water in regions where the weather is warm during a large part of the year, as in Oklahoma and southern California.

#### WATER COOLING IN TOWERS.

In towers, during hot dry weather, temperatures  $10^{\circ}$  to  $40^{\circ}$  F. below that of the atmosphere are at times obtained with minimum losses of water. Many plant operators who have not experimented to find the amount of water that gives the lowest temperature to the gas being treated, use far more than is needed or gives the best results. Water falling in excessive quantities in a tower does not acquire the lowest possible temperature from radiation or evaporation, and the large bulk of water flowing over the coils can not cool the gas as efficiently as a smaller amount does, for the same reason. The best results are obtained when minimum quantities of water are circulated and finely divided while passing downward through the tower. Only enough of the cooled water should be directed onto the pipe coils to keep all parts thoroughly wet, thus giving the water the greatest possible opportunity to evaporate.

The use of auxiliary cooling agents such as ammonia or ammonia and brine is discussed later in connection with the descriptions of plants using such methods.

It may be of interest and use to operators to note here the latent heats of vapors being treated in the cooling coils. Burrell<sup>a</sup> gives the following values for the latent heats of some petroleum distillates:

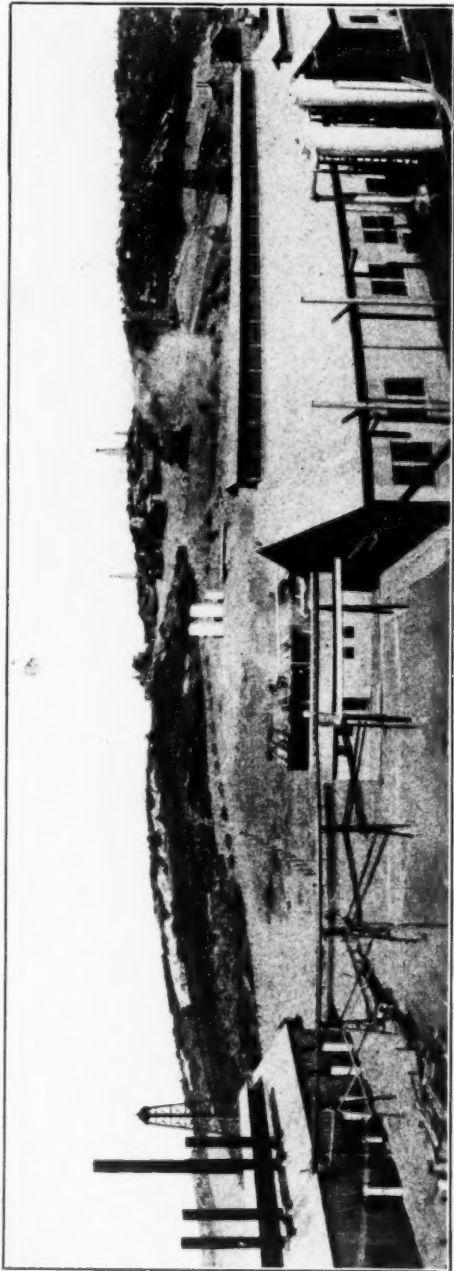
*Specific gravities and latent heats of four distillates.*

	Specific gravity, °B.	Latent heat, B. t. u. per pound.
Kerosene.....	43	105
Naphtha.....	56	103.5
Gasoline.....	65	100.6
Gasoline.....	89	100.2

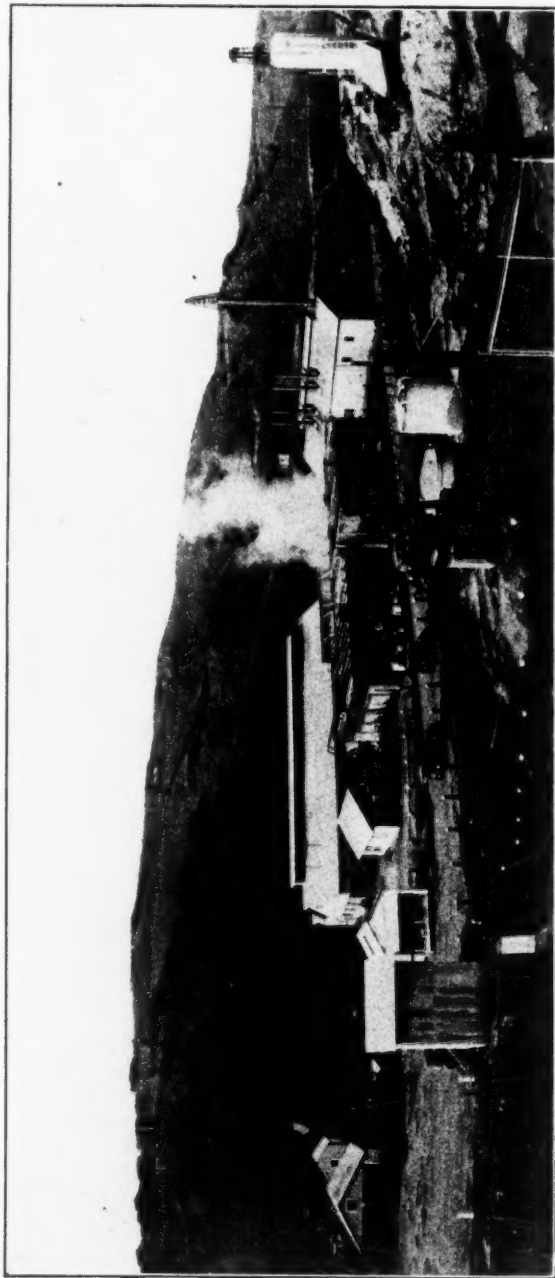
In gasoline computations it is customary to use as the latent heat 100 B. t. u. per pound. Kent gives the specific heat of liquid gasoline of specific gravity 0.68 to 0.70 as 0.53 to 0.55, and Lucke<sup>b</sup> quotes Regnault as stating that methane gas has a specific heat of 0.5929 at constant pressure and 0.4505 at constant volume.

<sup>a</sup> Burrell, G. A., Personal communication.

<sup>b</sup> Lucke, C. E., *Engineering thermodynamics*, 1912, p. 578.



VIEW OF 2,500,000-FOOT PLANT SHOWING ARRANGEMENT OF COMPRESSOR BUILDINGS, TOWERS, AND STORAGE TANKS.



ANOTHER VIEW OF PLANT SHOWN IN PLATE VI.

**TYPES OF COILS AND CONNECTIONS USED.**

Two systems of pipe connections are used between compressor discharges and cooling coils. In one system all low-stage compressors, and likewise all high-stage compressors, discharge the compressed gas into a common pipe or manifold, from which it is distributed by a manifold to the different sets of coils being used to cool the hot gas. (See figure 9, page 50.) The other system is to lead the gas discharged from each cylinder through a separate coil which cools only the gas from that compressor, the gas treated by each unit being kept separate throughout its entire circuit. The first method has the advantage of permitting one coil to be shut down or cut out for repairs while the compressor is running, the discharge from that machine being cooled in the coils still in use, or conversely, the coil may remain in use while the compressor is idle, and treat gas from other units. In the second method of connection if any coil or machine is out of commission the entire unit of which it is a part must be stopped, causing more of the plant to be idle.

Throughout the districts making natural-gas gasoline the 2-inch pipe in cooling coils is standard, and only a few plants using other sizes were found by the writer.

Systems and methods of connection vary widely, ranging from continuous return-bend coils in which all of the gas passes through the entire coil, to coils which divide first into two or more headers, and then into numerous separate pipes. In the multiple-header system each portion of gas passes through short lengths (20 to 80 feet) of the coil, and is again collected by headers before going to the accumulator tank and to the next stage of treatment. In the continuous system the gas passes rapidly through the total length of pipe, its temperature being reduced during the whole time of travel from end to end of the coil. In the multiple method the rate of flow in each pipe is reduced in proportion to the number of pipes used, so that the gas is sufficiently cooled while traveling through such a short length of coil.

There is much difference of opinion among operators as to which method gives the more satisfactory results. Many of the newest plants combine the two methods, as follows: Each coil unit is divided at the intake by a header into 3 to 12 sets of 2-inch continuous return-bend coils, each being 4 to 16 pipes high, and generally 20 feet long, depending on the cooling area desired. The intake header is placed horizontally at the top of the coil so as to allow the gas to travel downward in the same direction as the condensate. At the lower end of each set of return-bend coils the gas and condensate are again collected in a header before passing to the accumulator tank. Coils of this type and of the single-pipe continuous type have

the great disadvantage of being "hard to get at" in case any length of pipe in the coil needs replacement, whereas in multiple-header coils in which the ends of each pipe are packed in a gland, any member can be removed or replaced without taking down any other part of the coil.

#### DIRECTION OF FLOW OF GAS AND CONDENSATE.

It is universally conceded that the direction of flow of gas and condensate should be parallel and not countercurrent. As the liquid will drain toward the lowest point in the coil, the gas must enter at the top in order to flow with the condensate. As an illustration of the effect of counter flow, a plant in the Caddo field using a countercurrent flow of gas and condensate in the water-cooled coils produces no condensate whatever in the accumulator tank at the end of these coils. The gas yields 11.8 gallons of condensate per 1,000 cubic feet treated, but this condensate is all precipitated in double-pipe condensers cooled by expanded gas to a temperature of 38° F., in which the flow of gas and liquid are parallel. Undoubtedly some condensate would be precipitated in the water-cooled coil if the direction of gas flow was reversed. Other plants have obtained similar results under like conditions; one example being a California plant, in which the coil discharge pipe sloped upward to the accumulator tank, permitting condensate to gather in the bottom coils and discharge pipe and be constantly in contact with flowing gas. The accumulator tank was lowered so as to allow a drop in grade from the coils, with the result that the yield of condensate at that point increased noticeably. It seems that the condensate on long and intimate contact with the gas as above described, is again taken up by the gas as a vapor, even at high pressures, and carried to some point more conducive to precipitation and separation.

That condensate vaporizes in accumulator tanks has also been proved and has given rise to the practice of trapping off the liquid as soon as collected. Because of the facts stated, it appears to be the best and most productive practice to separate the gas and condensate as soon as possible after all the condensable fractions have been precipitated and always to allow the gas and condensate to flow in the same direction. If the above arguments hold true under all conditions, it would seem to be advisable to divide the gas to be cooled into a number of coils or pipes that will retain it only long enough to obtain the maximum cooling effect from the water used, and to separate the gas and condensate as soon as possible.

In order to divide the gas from a header equally in each of the coils or pipes of a coil, an orifice disk is sometimes placed in the intake from the header; the constriction causes a slight back pressure, forcing the gas to enter each coil in approximately equal quantities. The

size of the orifice is arbitrarily determined by making the sum of the areas of the orifice openings equal to the cross-sectional area of the pipe leading the gas to the header from the compressor discharge or the discharge manifold, as the case may be.

#### **RADIATING AREA OF LOW-PRESSURE COILS.**

In Table 3 the total surface areas of coils used in cooling gas from low-stage cylinders of various plants visited by the writer are tabulated, with the area per 1,000 cubic feet of gas treated per day; also, the area per horsepower used in compression. The average area of coil is between 0.6 and 0.7 square feet per 1,000 cubic feet of gas treated daily and nearly 3.5 square feet per horsepower used in compression. The latter factor is more useful for plant design, as the heat developed in compressing gas is a function of the power used in compression and not of the volume of gas being treated. A cooling area of 4 square feet per horsepower is usually used at gas-pumping plants and has proved satisfactory in most fields.

Column 10, Table 3, gives the temperature of the gas leaving the low-stage water-cooled coils at plants where such data was recorded and available. Minimum temperature should be maintained to precipitate the maximum percentage of condensate and benefit high-stage compression, as explained in previous paragraphs.

From these coils the gas passes to the low-stage accumulator tanks. Each coil may be provided with a separate tank or all the coils may be manifolded to one tank. Plate III, *C* (p. 26), shows the alternate arrangement of accumulator tanks of high and low pressure coils, each coil having a separate tank. The tanks are usually 3 to 4 feet in diameter by 6 to 10 feet high. The gas is led in at the side of the tank and near the top through a pipe turned or baffled downward inside of the tank, discharging at a point about midway between the top and bottom. The condensate settles to the bottom; the gas discharges at the top to the intake line of the high-pressure cylinder if each unit is independent or to the high-pressure intake manifold if that system is used.

High and low pressure coils, with intakes alternating, used at one plant are shown in Plate V, *B* (p. 34).

#### **PRODUCTION FROM LOW-PRESSURE TREATMENT.**

The proportion of condensate collected in the low-stage accumulator tanks averages 15 to 30 per cent of the total yield and varies between nothing and 40 per cent, depending on the content of condensable fractions in the gas and on the temperature and the pressure used. Some operators permit condensate to accumulate in the tanks until the entering gas is forced to pass through it, or to accumulate for a given time, and then run it into the storage tank through a hand valve.

The general practice, however, based on the theory that to separate gas and condensate as soon as possible produces the best results, is to remove the condensate from the accumulator tanks continuously with a small automatic trap that dumps often and with but little agitation keeps the tank practically empty at all times.

#### HIGH-PRESSURE TREATMENT.

From the low-pressure accumulator tanks the gas passes into the high-pressure cylinder of the compressor, and the cycle is repeated except that the higher pressure causes the lighter hydrocarbons to condense.

#### RADIATING AREA OF HIGH-PRESSURE COILS.

Table 3, which gives the average surface areas of both high and low pressure cooling coils at the plants visited, shows that a somewhat larger cooling area is used for the high-pressure gas. The area of high-pressure coils per 1,000 cubic feet of gas cooled daily was between 0.7 and 0.8 square feet and about 4.5 square feet per horsepower used in compression, whereas that of the low-pressure coils averaged between 0.6 and 0.7 square feet per 1,000 feet of gas and 3.5 square feet per horsepower. If the same amount of power is used by each cylinder of the compressor, there seems to be no reason why one cooling area should be larger than the other, unless the gas was not cooled in the low-stage coils to the temperature later obtained in the high-pressure coils.

The experience of A. W. Peake,<sup>a</sup> engineer in charge of gasoline production of the Mid West Oil Co., causes him to "believe that the coil area of the intercooler should be larger than the area of the aftercooler coils, as it permits condensation of more gasoline in the intercooler and reduces the chance of carrying condensate over into the high pressure cylinders, causing trouble by cutting the lubricating oil and thus wearing out the cylinders in a short time. This trouble has been experienced in quite a few plants. Increasing the intercooler area has been known to help overcome this, as also has been the placing of a steam or oil trap or some similar arrangement in the gas line, between low-pressure accumulators and high-pressure cylinder intake."

#### PERFECT COOLING.

Perfect cooling between low and high stage compression implies cooling the gas before it enters the high-pressure cylinder to the same temperature that it had on entering the low-stage unit. Such cooling is necessary if the two stages are to use the same amount of power in compressing equal quantities of gas an equal number of compressions. As shown in Table 3, the temperature of the gas

<sup>a</sup> Peake, A. W., Personal communication.

at the low-stage intake is usually higher than at the high-stage intake. Such a condition would, if the number of compressions were equal in each stage, cause an unbalancing of power in the high and the low pressure cylinders. In compression plants with imperfect cooling between stages the work in the cylinders is allowed to take care of itself in such a way that the number of compressions in the two stages is not exactly equal. As stated in previous paragraphs, it would be better practice to cool the gas at the plant intake to as low a temperature as practicable in water-cooled coils and to use the same temperature between compression stages and in the high-pressure coils. In general, to keep the gas at the lowest practicable temperature at all times during treatment is the best practice. From the high-pressure coils and accumulators the gas passes to the field fuel lines or, if expanded gas is used to reduce the temperature still lower, it is led to the high-pressure coils cooled by expanded gas.

#### USE OF EXPANDED GAS FOR COOLING.

TABLE 4.—Data on cooling of gas by expansion at various plants.

Plant No.	Discharge temperature of gas cooled in high-pressure coils.	Method of expansion.	Expansion unit discharge.			
			First stage.		Second stage.	
			Temperature.	Pressure.	Temperature.	Pressure.
	° F.		° F.	Pounds.	° F.	Pounds.
1.		Expansion valve.		25		
2.		Drilling engine.		10		
4.	42	Expansion valve.		10	(a)	(a)
6.	-6 to -17	2-stage expansion engine.		64	-40	10
7.	20 to -7	do.		30		
9.		do.		30		5
10.		1-stage expansion engine.		30		15
11.	10	do.	-40	15		
12.		do.		12		
14.	40	do.	-20	25		
16.	50	do.		14		
17.		do.		(b)		
19.	40	do.	32	26		
20.		do.				
21.		do.	32	55		
23.		Expansion valve.				
25.	65	2-stage expansion engine.			-30	10
26.	-30	do.		60	-12	5
31.		Expansion valve.				
33.		do.				
35.		1-stage expansion engine.	24			
37.	40	do.	37	10		
38.	66	do.	30			
39.	60	Expansion valve.				

a Changed to expansion engine.

b Vacuum.

#### METHODS OF EXPANSION.

At many plants the gas after treatment in high-pressure water-cooled coils and accumulator tanks is further cooled, still at maximum pressure, in heat interchangers or double-pipe condensers by expanded gas. Two methods are used to obtain low temperatures

by the expansion of gas, (1) expanding the gas through a small opening or valve to a lower pressure, thus producing the absorption of heat, and (2) expanding the gas adiabatically in the power cylinders of a steam power unit, such as a compressor, pump, or drilling engine. Table 4 gives methods of expansion used at plants visited, also temperatures and pressures of the gas at the different stages of expansion and cooling.

#### EXPANSION THROUGH AN ORIFICE OR VALVE.

In the first method the high-pressure gas carrying some gasoline not removed by previous treatment is passed through either the inside or outside pipe of a double-pipe heat interchanger, and the dry gas is expanded through a small opening, such as a  $\frac{1}{2}$ -inch valve, between the pipes, thus cooling the high-pressure gas and causing further condensation of gasoline. The high pressure gas and the condensate are led to an accumulator tank, where the condensate is collected and removed. From the accumulator tank the gas passes through the expansion valve of the heat exchanger and the pressure is lowered to 10 or 15 pounds, or the pressure desired or necessary to carry the gas through the field lines. The refrigerating effect obtained by this method is surprisingly small, and although many coils using this principle for cooling have been installed, few of them lower the temperature of the high-pressure gas enough to be of material benefit. In certain standard installations one coil of this type is installed with each high-pressure unit, the inside pipe of the coil having a diameter of 3 or 4 inches, and the outside 6 or 8 inches. The length is usually approximately 80 feet, and either the straight-line or return-bend type is used. After leaving this coil the gas is returned to the field for use on the lease, or sold to commercial gas companies.

#### COILS USED IN CONJUNCTION WITH EXPANSION ENGINES.

A study of Table 5 will give the reader an idea of the great variety of types and sizes of coils used as heat exchangers or refrigerators in conjunction with expansion engines and valve expanders. The principle is the same in all types. The cold expanded gas passes through one of the pipe members of a double pipe-interchanger while the high-pressure gas from the water-cooled coils passes through the other member. At the end of the coil in which the high-pressure gas is treated, an accumulator tank or drip collects the condensed vapor as in the water-cooled coils.

Of the plants listed in Table 5, No. 6 used the smallest size of pipe to form the double-pipe coil, 2-inch pipes inside of 3-inch.<sup>a</sup> The cooling effect in this coil is rapid, but a small quantity of moisture in the gas will tend to freeze the coil and stop the flow, necessitating

<sup>a</sup> The  $\frac{1}{2}$ -inch in 2-inch coil mentioned in Table 5 as being part of plant 11 has been abandoned in favor of a larger double coil.

continual watchfulness and more or less thawing to do. This particular coil is protected to some extent from water vapor by first passing the gas through two other double coils, 4-inch pipe in 6-inch, which are cooled by the expanded gas from the small 2-inch in 3-inch coil. In the larger coils the gas is cooled only to such a temperature that the greater part of the liquid condensed is water. The cooling area varies between 0.15 square foot and 3.70 square feet per 1,000 cubic feet of gas treated, and averages 0.563 square foot.

TABLE 5.—Data on double-pipe coils or heat exchangers used at various plants.

Plant No.	Type of coil or exchanger.	Number of coils.	Size of pipe.			Length of single coil.	Total length of coil.	Radiating area.	
			Number of pipes.	Inside diameter.	Outside diameter.			Total.	Per 1,000 cubic feet of gas treated daily.
				Inches.	Inches.	Feet.	Feet.	Sq. ft.	Sq. ft.
1.....	Tubular.....	2	50	2	36	18	.....	940	0.940
2.....	Straight line.....	1	1	8	16	80	80	167	.372
3.....	do.....	2	1	8	12	60	120	250	.200
4.....	Return bend.....	2	1	4	6	50	200	210	.....
6.....	do.....	120	1	2	3	20	2,400	1,257	.590
7.....	Special straight line.....	14	5	2½	12½	100	1,400	4,575	.610
9.....	Straight line.....	5	1	8	12½	100	500	1,050	1.05
10.....	Special.....	2	1	12½	24	40	80	262	.349
11.....	Straight line.....	3	1	4	6	100	300	315	.....
12.....	Return bend.....	96	1	1½	2	20	1,920	630	.630
13.....	do.....	6	1	4	6	80	480	502	.714
14.....	do.....	2	1	2½	5	80	160	105	.....
15.....	Return bend.....	2	1	4	6½	80	160	167	.272
16.....	do.....	2	1	4	8	90	180	190	.750
17.....	do.....	2	1	3	8	80	160	130	.173
19.....	Horizontal tubular.....	4	52	1½	30	16	832	326	.181
20.....	Vertical tubular.....	2	72	2	30	12	1,728	900	.600
21.....	do.....	1	72	2	30	12	864	450	.450
30.....	Return bend.....	6	1	2	4	40	240	126	.168
32.....	do.....	20	1	3	5	40	800	630	.210
33.....	do.....	4	1	4	6	100	400	420	.233
51.....	do.....	1	2	2	10	40	40	42	.170
55.....	do.....	3	1	4	6½	80	240	189	.150
76.....	do.....	12	1	4	8	40	480	500	.250
77.....	do.....	4	1	4	8	40	160	167	.420
78.....	do.....	4	1	4	8	40	160	167	3.70
79.....	do.....	1	1	4	6	80	80	84	.330

From the 2-inch in 3-inch coil the sizes range through nearly all possible combinations up to 12½-inch inside of 24-inch. As the pipe sizes become larger, cooling is slower. The cooling effect in the last-mentioned coil is so sluggish that it is doubtful whether the coil can be considered efficient. The tubular type of heat interchangers, such as are used in plants 19, 20, and 21, either horizontal or vertical, are built in the form of a tubular boiler, the cold gas being either in the main drum shell or in the tubes. This type of interchanger has not been as satisfactory as some of the double-pipe coils.

It seems that the length of time and the necessary intimate contact between the gas and the tube surfaces is not obtained, and radiation is incomplete, the high-pressure gas being discharged at too high and the expanded gas at too low a temperature. Both the high pressure and the expanded gas is thought to follow channels through the drum

and tubes and form eddies or dead spaces, leaving some parts of the tubes and shell inactive. In this type of interchanger a series of baffles in both the tubes and shell might give the desired result, as has been done in refinery practice. This type of cooler is used at a number of plants as a water condenser and as a unit in conjunction with double-pipe coils of smaller size.

The coil used at plant 7 (see Table 5 and fig. 7) is of special straight-line construction, consisting of five  $2\frac{1}{2}$ -inch pipes inside of a  $12\frac{1}{2}$ -inch casing 100 feet long. This type of interchanger is not uncommon in refinery practice, being used for the interchange of heat between oil coming from and going to stills, but in the compression-plant industry its adaptation is unique. There are 14 units of this type in the entire battery. The high-pressure gas from the water-cooled coils is divided by a header and passes in parallel through the

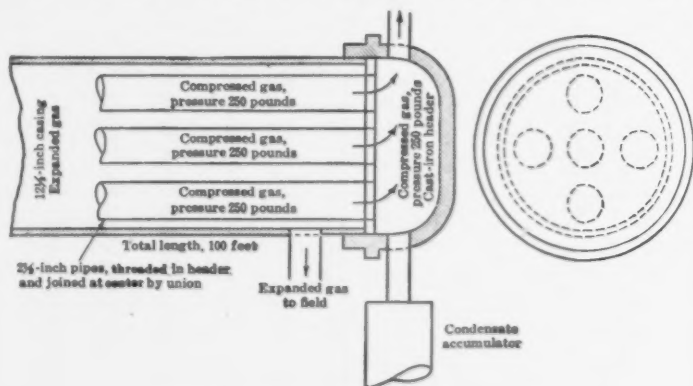


FIGURE 7.—Sections of special straight-line double coil.

$2\frac{1}{2}$ -inch pipes of four of the units, at the end of which it is collected by a header, and again divided in the same way, passing in parallel through the  $2\frac{1}{2}$ -inch pipes of the remaining 10 units of the battery of 14. At the end of each unit a drip (see fig. 7) collects the condensate formed.

From the discharge header at the end of the group of 10 exchangers the gas goes directly to the expansion engine. The engine exhaust, or low-pressure cold gas, is returned to the 10 interchangers, passing through them in parallel in the  $12\frac{1}{2}$ -inch shell or outside pipe counter-current to the high-pressure gas. After passing through the 10 units the gas is collected in one main or header and is again divided and passes in parallel through the outside casings of the other four units, again counter-current to the high-pressure gas.

By using the 14 interchangers in two sets or batteries the gas is cooled in two stages, and by the counterflow system the coldest expanded gas is brought into contact with the coldest high-pressure

gas, thus making a gradual and complete interchange of heat. The expanded gas, on leaving the battery of four coils, has been raised to approximately the temperature of the high-pressure gas from the water-cooled coils, and the high-pressure gas traversing the inside pipes is brought to the lowest possible temperature by being circulated in contact with the coldest expanded gas after it has radiated a considerable portion of its heat to the partly warmed, expanded gas in the unit of four interchangers. Of the total plant production 10.4 per cent is credited to this system of cooling. These coils are not protected by a building, but are set well above the ground and housed in wooden boxes filled with sawdust, which covers the outer pipe fully 12 inches on all sides.

Plates VIII, A, and IX show views of the coils and expansion sets taken at a plant which the writer was fortunate enough to visit shortly after the installation of the expansion engine and before the cork insulation of the pipes had been completed.

#### INCREASE IN PRODUCTION DUE TO COOLING BY EXPANSION.

In Table 6 are recorded the percentages of total production and the gravities, in °B., of the fractions of condensate collected at the different stages in accumulator tanks in plants using expansion engines and keeping records of such data. The table shows that the percentage of condensate credited to expansion units varies between 10 and 50 per cent, except at plant 76, at which all of the condensate is collected in the accumulator tank after the cooling by expanded gas is completed. This case was cited before, and is undoubtedly due to the fact that the gas is forced to travel upward through the water-cooled coils, whereas the natural flow of any condensate formed would be downward. Apparently the condensate is absorbed by the gas and precipitated later in the double-pipe interchangers cooled by expanded gas.

TABLE 6.—Percentages and gravities of condensate collected in various accumulator tanks in plants using expansion engines.

Plant No.	Condensate produced from—					
	Low-pressure coil.		High-pressure coil.		Expansion coil.	
	Per cent.	Gravity, °B.	Per cent.	Gravity, °B.	Per cent.	Gravity, °B.
3.....	33	.....	60	79	7	95
4.....	15	.....	60	.....	25	.....
6.....	17.6	63.8	32.7	78	a 49.7	96
7.....	24.6	60	65	65	10.4	.....
9.....	26	60	42	80	22	90
11.....	.....	67	.....	84	.....	93
17.....	30	57	50	71	20	80
32.....	.....	.....	.....	.....	10-15	95
33.....	40	70	35	80	25	100
76.....	.....	.....	.....	.....	a 100	76-82

a No condensate in water-cooled coils.

## FIELDS IN WHICH EXPANSION UNITS ARE USED.

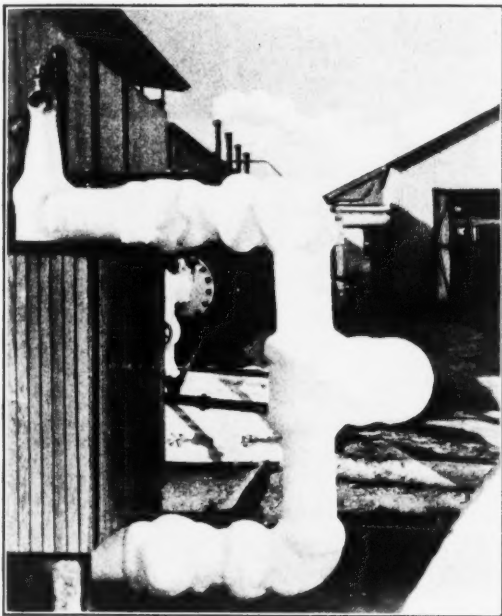
In the eastern fields, where much of the gas treated contains little or no fixed or true gases, being almost entirely composed of vapors of the higher hydrocarbons, the use of extremely low temperatures is of little or no benefit, and expansion engines and coils have not, in any plant known to the writer, been installed.

Mid-Continent practice, taken as a whole, does not include expansion engines as a part of the usual installation; expansion sets are, however, being adopted by some operators building new plants at the present time as a part of the original plant design. Two plants (Nos. 32 and 33) visited by the writer in Oklahoma had expansion engines and coils in service, both being in the Glenn pool. The operators of these plants stated that of the total production 10 to 25 per cent was directly due to cooling by gas expanded in engine cylinders, as shown in Table 6. The cooling area of the double-pipe heat interchangers used in the two plants averages 0.22 square foot per 1,000 cubic feet of gas treated, which is less than one-half the average area used in California practice.

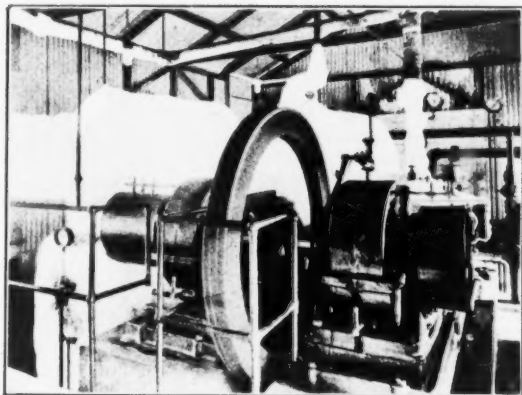
In the Caddo, Louisiana, field one company operating three compression plants uses expansion units and coils in each plant.

## EXPANSION ENGINES IN CALIFORNIA FIELDS.

The widest range of development in the installation of heat interchangers and the use of expansion engines is in California practice. At plants 3, 4, 6, 7, 9, 11, and 17 in the various California fields, 7 to 50 per cent of the total production is from expansion units, as shown in Table 6. It is generally figured in these fields that 25 per cent of the production is due to the expansion treatment. A plant in the Fullerton field treating 2,500,000 cubic feet of gas daily produced 3,000 to 3,200 gallons of condensate with a gravity of 72° B. before the expansion unit was put into operation. The expansion unit increased the daily production to between 4,000 and 4,300 gallons of condensate with a gravity of 80° to 84° B., or about 25 per cent of the total yield. The radiating areas in the heat exchangers used in California plants (see Table 6, plants 1 to 21) vary from 0.20 to 1.05 square feet per 1,000 cubic feet of gas treated daily. A radiating area large enough to warm the cold or expanded gas to the temperature, as nearly as practicable, of the high-pressure gas from the water-cooled coils is all that is necessary, because any further increase in cooling surface, the two gases being brought to approximately the same temperature, has no effect. The proper area for each 1,000 cubic feet of gas to be treated daily is a factor that can be obtained only by experiment at each plant, unless the designer has had experience in the particular field and with the particular gas

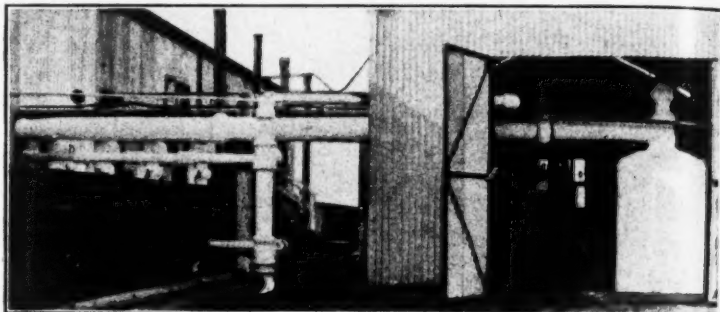


A. END OF HORIZONTAL TUBULAR COOLER, TYPE USED IN PLANTS 19, 20, AND 21.

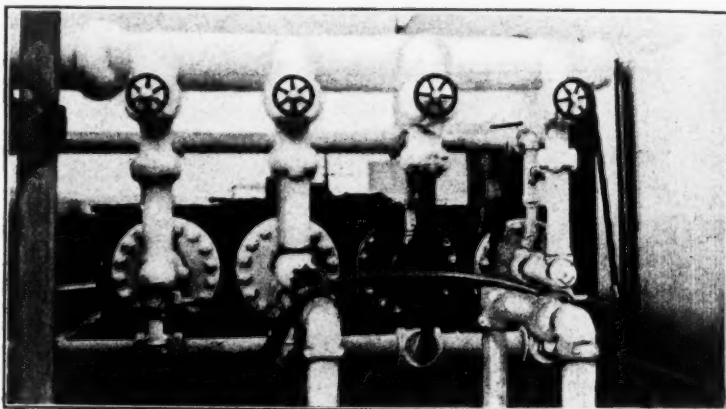


B. TWO-STAGE EXPANSION ENGINE IN COMPRESSION PLANT.

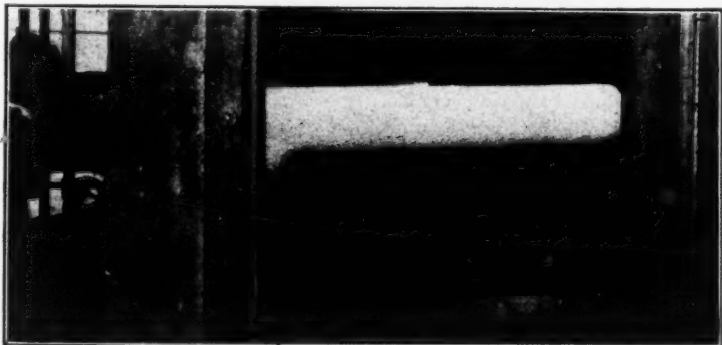
Note ice on accumulator tank and piping.



A. EXPANSION-EXHAUST ACCUMULATOR TANK AND PIPING. TANKS SHOW 2-INCH COATING OF FROST. TEMPERATURE OF GAS WAS BELOW  $0^{\circ}$  F.



B. END OF DOUBLE-PIPE COILS AND INTAKE MANIFOLD FOR EXPANDED GAS.



C. HEADER FOR EXPANDED GAS. CORK INSULATED INTAKE, PIPES EXPOSED TO AIR.

to be treated, or has data on the area used and the efficiency obtained at another plant already at work in the same field and treating the same gas.

#### TEMPERATURES OBTAINED FROM GAS EXPANSION.

The temperatures produced by heat exchange on high-pressure gas vary in practice from  $-17^{\circ}$  to  $+65^{\circ}$  F., or between  $75^{\circ}$  below and  $20^{\circ}$  F. below atmospheric temperature, as shown in Table 4 (p. 41). The best temperature to use in a given plant depends, as does the ultimate high pressure used, on the characteristics of the gas and the product desired, also on the efficiency of extraction and temperature previously obtained in the water-cooled coils. As the condensation of vapors depends on both temperature and pressure, in accordance with the physical laws of gases, at a given pressure there is some critical temperature below which it is useless to cool the gas, as Burrell<sup>a</sup> has demonstrated in the laboratory method of determining the quantity of condensable vapors in any given gas. The method of laboratory test uses only atmospheric (14.4 pounds at an elevation of 600 feet) pressure, and the extremely low temperature of  $115^{\circ}$  C. below zero, which is equal to  $175^{\circ}$  F. below zero.

At this temperature all of the propane and the butane are liquefied, which in compression practice is neither practicable nor desirable, because these two hydrocarbons are so volatile at atmospheric temperatures and pressures as cause them to weather out of plant products to a large extent, if not entirely. As a portion of each condensable hydrocarbon is precipitated and taken out of the gas, the pressure necessary to condense the remaining portion at a constant temperature rises, in accordance with the law of partial pressures. Or, with the pressure remaining constant, the temperature must be reduced to precipitate the remaining portion of that particular vapor fraction. Conversely, if at a given pressure any condensable constituent would be entirely precipitated when the gas reached the critical temperature of that fraction, the composition of the gas would be simplified and the precipitation of the other condensable fractions more complete at the same pressure. This has been demonstrated in practice in a plant using a maximum pressure of 250 pounds, and a temperature as low as  $10^{\circ}$  F. below zero at the discharge of the high-pressure coil, which was cooled by expanded gas. (See Pl. IX, A.) The condensate collected in the tank at the end of the coil contained more than 1 per cent of water; a small percentage of water was also found with the lightest condensate precipitated at the exhaust of the second stage of the expansion engine. (See Pl. VIII, B.) If water vapor is retained through all of the steps of compression and

<sup>a</sup> Burrell, G. A., and Jones, G. W., Methods of testing natural gas for gasoline content: Tech. Paper, 87, Bureau of Mines, 1916, p. 26.

cooling, as demonstrated in the plant just cited, it is probable that portions of all the hydrocarbon fractions are also. The points to be determined in any plant are the quantity of such vapors being lost and the temperature necessary to condense them as well as the value of the product and the cost of an installation to obtain the required results.

The value of the condensate obtained will depend on the quantity that can be marketed, and if excessive pressures are used, the product may be so light and volatile as to be of little value. A proper relation between pressure and temperature will in all instances yield the maximum marketable condensate from any given gas, and this relation can be found only by trials and tests made at each plant. In the plant cited above, the product obtained in the accumulator at the expansion engine exhaust had a gravity of 105° B., and probably consisted principally of butane, with small proportions of the other higher hydrocarbons and of water. The gas in this accumulator had a temperature of 40° F. below zero and a pressure of 10 pounds, as the result of the two stages of expansion. It was found that in the expansion cylinder of the engine, the gas had reached a temperature lower than 100° F. below zero before being exhausted. The quick rise in the temperature of the gas between the cylinder and the tank, which was connected to the exhaust by a short insulated pipe, is probably due to two factors, radiation from the cylinder walls and the latent heat of vapors given out on condensation.

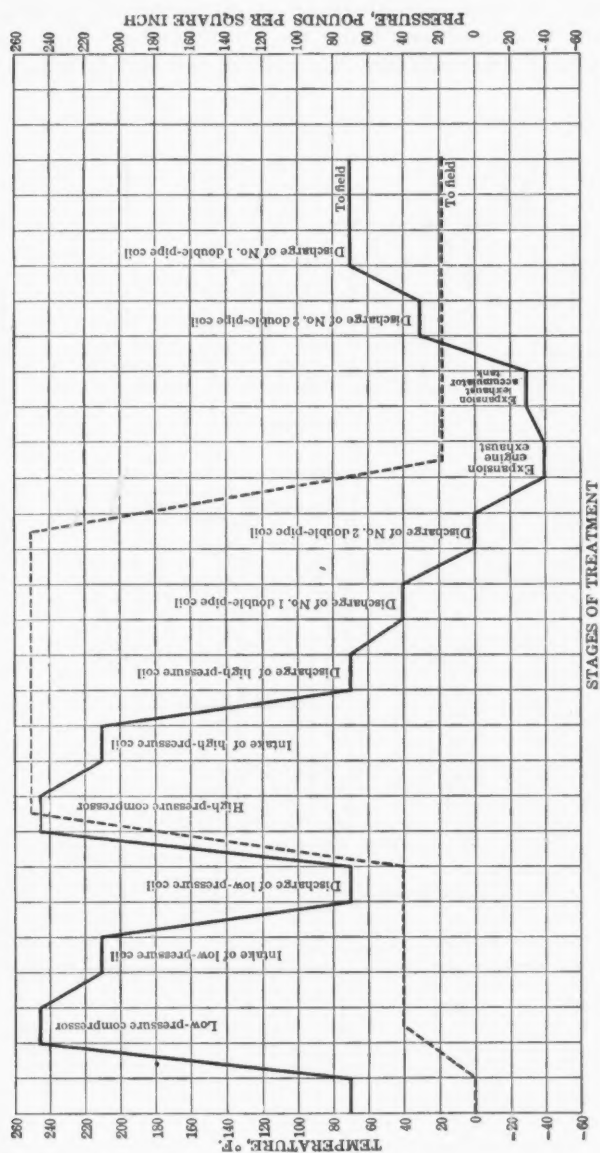
In a plant in Oklahoma, in experimenting with expansion units, it was found that the desired low temperatures could not be obtained. So little vapor was precipitated in the coils ahead of the expansion unit that in expanding the gas the latent heat given up by the condensing vapors immediately reheated the expanding gas to 20° F. The remedy for a condition of this kind would necessarily have to be found either in the pressure or water cooling to which the gas was being subjected.

#### TEMPERATURE AND PRESSURE CHANGES IN A COMPRESSION PLANT.

Figure 8 shows diagrammatically the changes in both pressure and temperature to which gas is subjected in average compression-plant practice. The vertical coordinates show temperatures in degrees Fahrenheit for the solid line or temperature curve, and pressures in pounds per square inch for the dotted or pressure curve. The horizontal coordinates represent the different stages of treatment at which the changes of pressure and temperature occur.

#### FLOW SHEET OF A COMPRESSION PLANT.

Figure 9 shows the gas flow diagram of a 2-stage compression plant using single-stage expansion, connected with two sets of expanded-gas cooled coils in series. The gas intakes and discharges of the com-



STAGES OF TREATMENT

FIGURE 8.—Diagram showing the changes in temperature and pressure of gas in compression-plant practice. Dotted line is pressure curve, solid line is temperature curve.

pressors and the water-cooled coils are shown connected in manifold, this system of connections being the most flexible. With valves properly placed, any unit, part of a unit, or coil may be cut out for

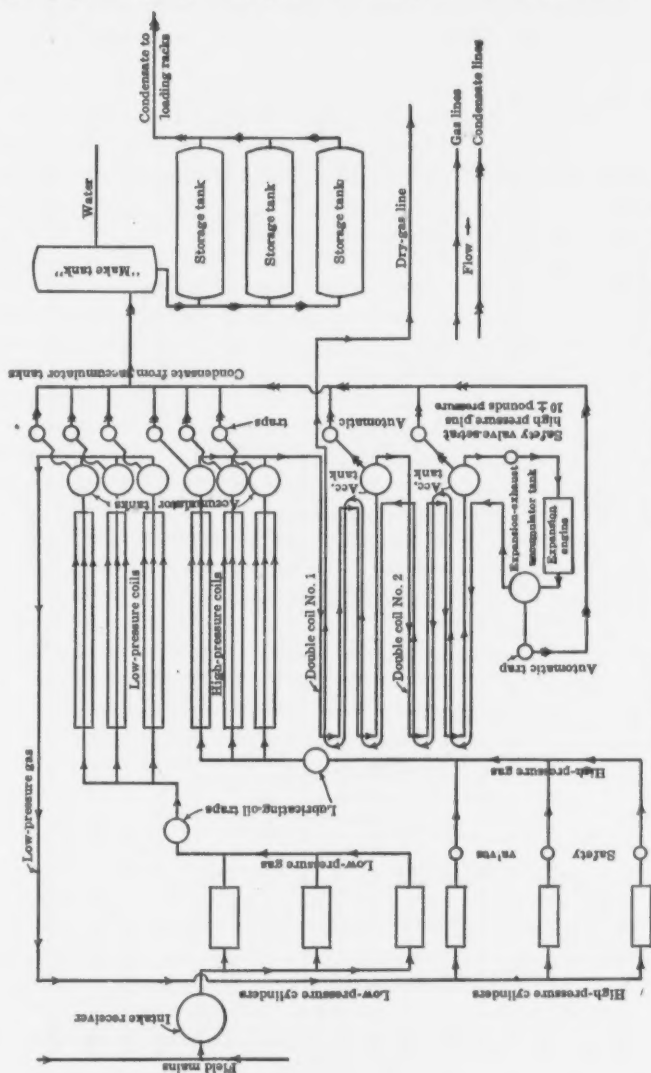
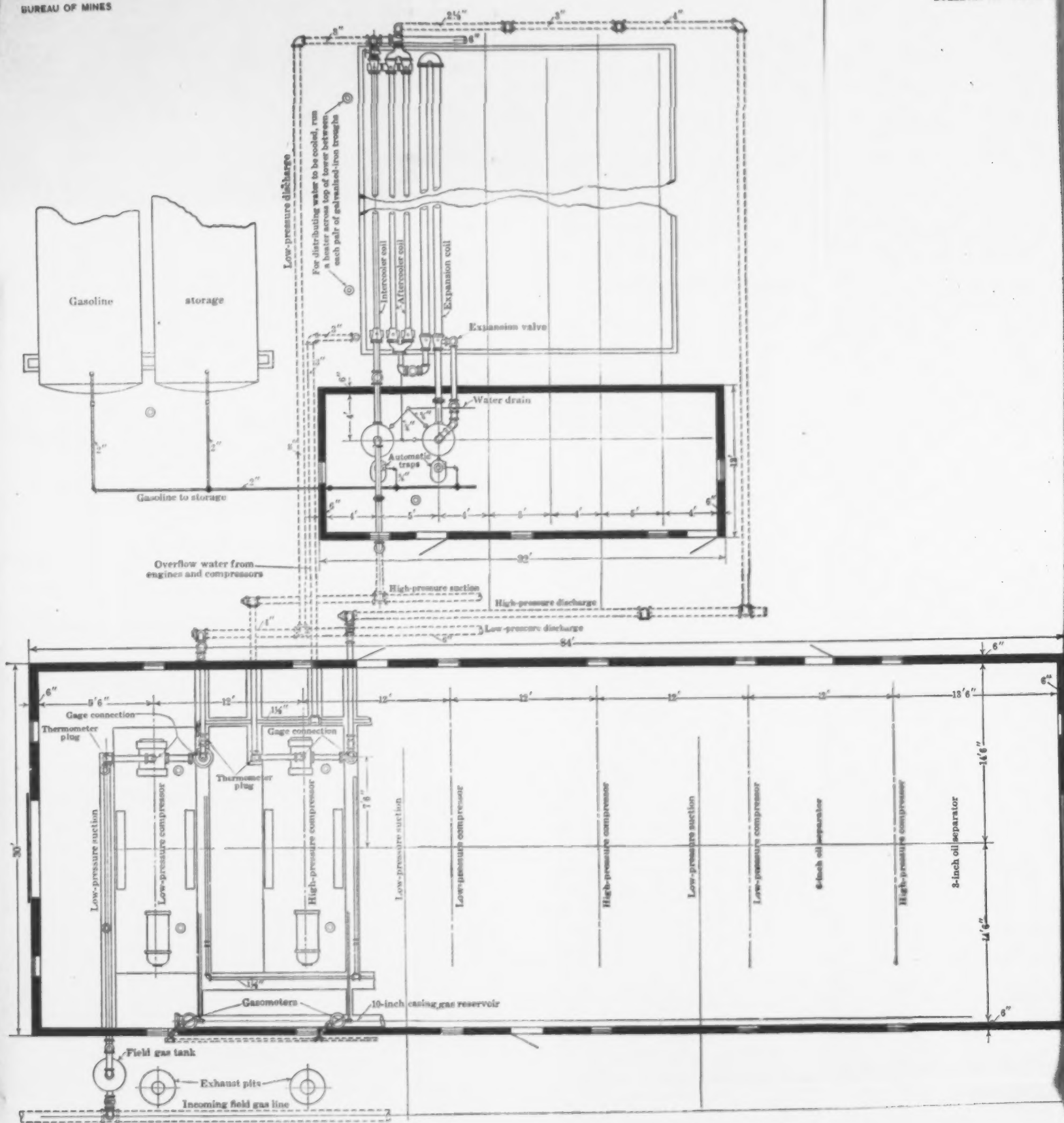
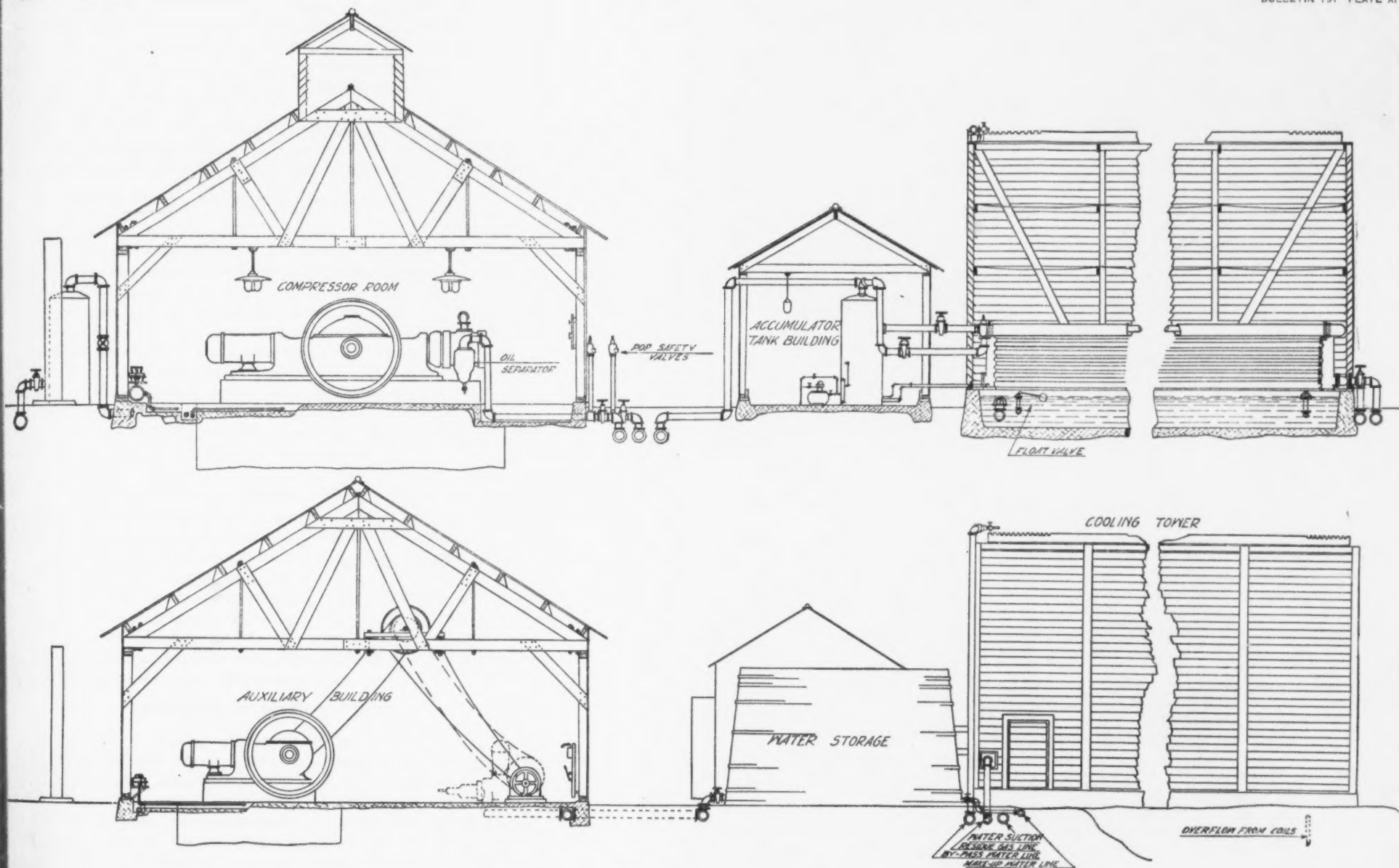


FIGURE 9.—Flow sheet of compression plant using 2-stage compression and single-stage expansion.

inspection or repairs without shutting down any other part or stopping plant operations, the work of the inactive unit being taken up by a small overload on the other units.



PLAN OF TYPICAL DIRECT-CONNECTED COMPRESSOR PLANT, COILS, AND TOWER.



ELEVATION OF COMPRESSOR, AUXILIARY BUILDINGS, AND COOLING TOWER OF PLANT SHOWN IN PLATE X.

A single-stage expansion engine is shown connected with two double-pipe coils in series; if two stages of expansion were being used each of the double-pipe coils would use the gas expanded in one stage and be so connected that the gas from coil No. 1, using first-stage expanded gas, would return to the second-stage expansion cylinder, from which it would be returned to coil No. 2 to further cool the high-pressure gas.

Plates X and XI show plans and elevations of a typical direct-connected compressor plant. The low-pressure and the high-pressure cylinders are operated independently by separate gas engines.

#### USE OF POWER DEVELOPED BY GAS EXPANSION.

At all plants where expansion units are used, the development of power by the expansion of the gas has been a secondary consideration. In a number of plants power is developed only to give resistance to the expanding gas, as in a plant using a pump under a back pressure of 150 pounds, and in another plant compressing air to 40-pound pressure, only to release it to the atmosphere through a small valve set to hold the required back pressure on the natural gas.

In plant 17 the compressor end of the expansion unit holds a vacuum on the double-pipe coil and on the exhaust of the power cylinder, and delivers the gas at a pressure sufficient to return it to the lease. (See Pl. XII, A.) This use of the power developed is not uncommon, although usually the compressor suction is above atmospheric pressure. At plant 76 the power developed from expanding the gas in two single-stage cylinders working in duplex is used to compress air in two stages to a pressure of 85 pounds, to be used in air lifts in pumping oil wells. Other plants use the power generated by single-stage expansion units, as in the tandem compressor, or by two-stage expansion units, as in the cross-compound machines, to drive one of the two-stage compressor units connected in parallel with the other compression cylinders, both at the intake and the discharge. A compressor used in this way may, as at plants 6 and 14, take gas from and deliver it to the manifolds used for the intake and discharge of the other compression units.

#### EFFICIENCY OF EXPANSION UNITS.

The amount of power developed in an expansion engine as compared with the amount used in compression is very low, probably not more than 5 or 10 per cent in average plants. This condition is to be expected because of the energy loss through dissipation of heat, the consumption of power in operating the piston and valve in the expansion cylinder, and the reduction in pressure through losses of gas and vapor by condensation and leakage during transmission through pipes and cooling systems.

An exceptional instance of power developed in an expansion unit was noted at a California plant. Tests showed that between 25 and 35 per cent of the power used to compress the gas was developed by the expansion engine, which used in its power cylinders all of the gas compressed in two stages of expansion, with heating between the two expansion cylinders. The plant compressed 1,900 cubic feet of gas per minute, of which 690 cubic feet was compressed in the compressor end of the expansion engine.

The gas entering the high-pressure cylinder of the expansion engine at a pressure of 250 pounds had a temperature of 5° F. below zero; the discharge pressure was 50 pounds. The gas was then passed through double-pipe coils and heated to 50° F. before it entered the low-pressure power cylinder. From this cylinder it was exhausted at a pressure of 10 pounds and a temperature of 40° F. below zero. The gas from the second expansion exhaust was used for cooling the high-pressure gas, and was then discharged from the plant at 57° F. A measurement of the temperature in the low-pressure expansion cylinder indicated a temperature of 140° F. below zero.

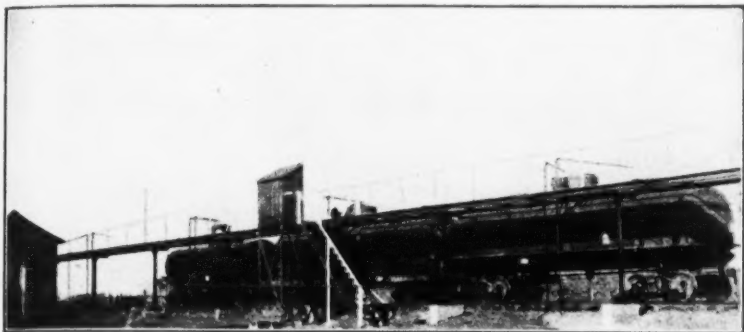
If a more efficient return of power were made an object, more power could be developed by heating the high-pressure gas, after it leaves the double-pipe interchanger, in an interchanger with the hot gas from the high and the low pressure compression cylinders. If desirable the gas could be further heated in a double-pipe interchanger by the exhaust from the power cylinder of the gas engine, or in a tubular interchanger such as is used for preheating boiler water with exhaust gases.

Heating the compressed gas before it enters the valve chest of the expansion cylinder would also tend to reduce freezing at that point, thus reducing the power used in moving the valve mechanism.

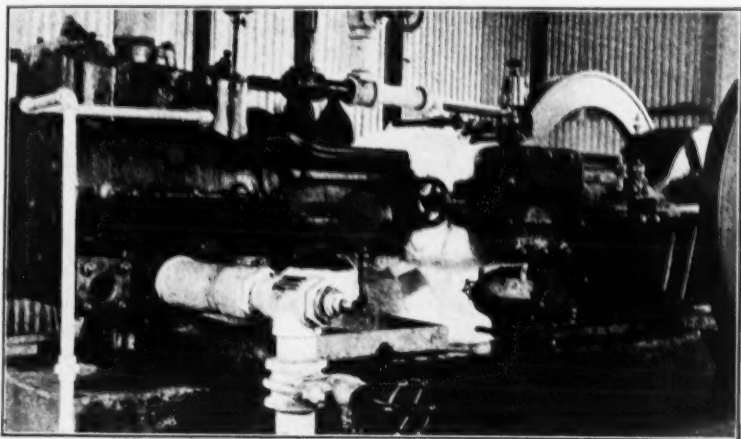
To obtain as low temperatures of the expanded gas, with preheating as without preheating, more power would have to be developed and used by the expansion unit. This could be accomplished by added expansion units, by increasing the load, or by running the compressor faster at the same pressure, thus increasing the total volume of gas compressed in a given unit of time.

#### EXPANSION FOR POWER ALONE.

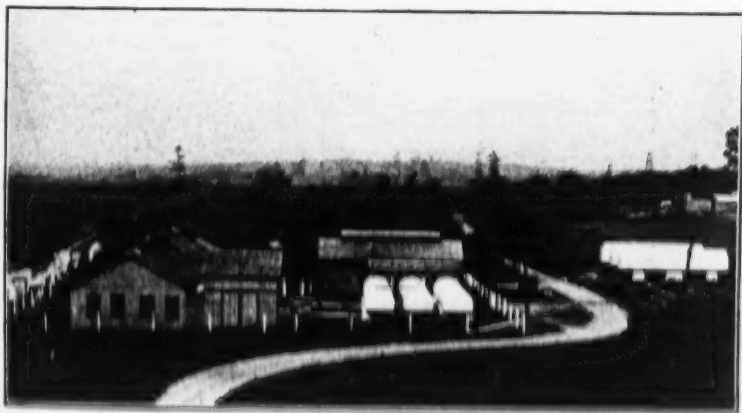
In expanding compressed gas for power purposes only, and not for refrigeration, as is contemplated in an eastern plant, preheating the gases by either the hot compressed gas or the engine exhaust would be necessary in order to make the installation a commercial success. Using a relatively small quantity of gas at a low temperature (60° F.) would hardly pay in power delivered, as compared with a gas engine using gas worth 15 cents or less per 1,000 cubic feet.



A. LOADING RACK FOR TANK CARS AT BLENDING STATION.



B. SINGLE-STAGE COMPRESSOR USED AS EXPANSION ENGINE PUMPING GAS TO FIELD AT 60 POUNDS PRESSURE.



C. COMPRESSION PLANT, SHOWING HORIZONTAL TYPE OF "MAKE" TANKS IN MIDDLE FOREGROUND, AND OF ACCUMULATOR TANKS, AT RIGHT.



**USES MADE OF TREATED GAS.**

With the passage of the gas through the coils of the expansion unit, the treatment for recovery of gasoline is finished.

Gas used for power to run the compression plant, either in gas engines or under boilers, is universally taken from the treated gas, the rest being returned to the lease or pumped into the lines of a commercial gas company. The lease or contract usually stipulates that gas used for power in the compression plant is to be taken from the treated gas at no cost to the lessee.

**GAS USED PER HORSEPOWER IN COMPRESSION UNITS.**

The quantity of gas necessary to operate a gas engine will vary from 9 to 18 cubic feet per horsepower-hour, depending on the size, type, and age of the engine and the care given it. Boilers in a steam plant require 40 to 120 feet per horsepower hour. A plant having six 80-horsepower, direct-connected, horizontal, 2-cycle gas engines used between 12 and 14 feet. The engines had been in service two years and had been well cared for. The large 450 to 1,100 horsepower, horizontal, direct-connected, tandem, double-acting, 4-cycle units will use as little as 9 feet and the 150 to 200 horsepower, vertical, 4-cylinder, 4-cycle, belted units will use 10 to 14 feet per horsepower hour.

Oliphant<sup>a</sup> gives the following table showing the average amount of natural gas required to operate gas engines or to supply a steam-engine plant using natural gas as fuel under the boilers in cubic feet per indicated horsepower hour:

*Cubic feet of natural gas required per horsepower-hour to drive a gas engine or steam plant.*

	Cu. ft.
Large gas engine, highest type.....	9
Ordinary gas engine.....	13
Triple-expansion condensing steam engine.....	16
Double-expansion condensing steam engine.....	20
Single-cylinder steam engine with cut-off.....	40
Ordinary high-pressure steam engine without cut-off.....	80
Ordinary oil-well pumping steam engine.....	130

From 10 to 12 cubic feet of air is necessary for the complete combustion of 1 cubic foot of natural gas.

**PERCENTAGE OF GAS RETURNED AFTER CONDENSATE AND GAS USED FOR POWER IS DEDUCTED.**

The reduction in the volume of the gas from treatment by the compression process is unaccountably large. As has been stated, in treating gas from old wells that have been gas-pumped for years and are held at high vacuums, practically all of the gas disappears in one stage or another of the treatment, often not enough being left to run the engines.

<sup>a</sup> Oliphant, F. H., Catalogue of metric metal works, 1914, p. 42.

Gas produced under natural pressure in the newer fields contained a much higher percentage of fixed gases, hence the quantity of residual gas, after condensate and gas used for power have been deducted, reaches 70, or, in some plants, it is claimed, 80 per cent of the total wet gas entering the plant. Exact figures on the quantities of residual gas are seldom kept in compression plants, it being a matter of little importance in most fields. It appears, however, from the figures that the writer was able to obtain that in plants treating gas yielding  $1\frac{1}{2}$  to 2 gallons of condensate per 1,000 cubic feet the net amount of gas left after treatment and deducting gas used as fuel, would average approximately 66 per cent of the total amount entering the plant. As the gas being treated increased in gasoline content the quantity of residual gas became less and less until it was not sufficient to furnish power for compression.

#### GAS USED FOR POWER AND TO FORM CONDENSATE.

Between 10 and 15 per cent of the total quantity of gas treated is required for power purposes, depending on the type and the efficiency of the engines driving the compressors. Burrell<sup>a</sup> states that it takes, on an average, 35 cubic feet of vapor to produce 1 gallon of condensate, or 3.5 per cent for each gallon produced from 1,000 cubic feet of gas, or if 3 gallons of unweathered product is made it will account for 10.5 per cent of the total gas entering the plant. The condensation of water vapor during the treatment will also account for a certain percentage of the total volume. The gas and vapor unaccounted for in the ways noted must be lost by leakage in pipes and machines during the various stages of plant operation, and by weathering of light fractions.

#### FOREIGN CONSTITUENTS IN NATURAL GAS.

##### AIR.

Besides water vapor, a number of gases not of the hydrocarbon groups are often found in natural gas. Air, if present, may be a constituent of gas from wells under high vacuums, but is usually due to inward leakage, either in the well casing or in lines transmitting the gas to the plant. At a plant visited in the Shallow pool of Oklahoma, the writer was informed that the gas being treated contained 30 per cent air. The area from which the gas was being drawn covered 12 square miles, making the use of long gathering lines and many vacuum pumps necessary, which probably accounts for the extremely high air content.

<sup>a</sup> Burrell, G. A., Seibert, F. M., and Oberfell, G. G., The condensation of gasoline from natural gas. Bull. 88, Bureau of Mines, 1915, p. 60.

**WATER VAPOR.**

Air always carries more or less water vapor with it, and this fact may account for part of the water precipitated with condensate. As most oils carry some water with them from the oil-bearing formations, it is natural to believe that some water vapor from this source would be carried into the gas, especially when the wells are being gas-pumped and low pressures maintained. The temperature of the oil and water under ground would also tend to allow water vapor to form and be held in the gas. In one instance, the oil coming from a certain well also producing gas had a temperature of 150° F. in the flow lines.

A California plant treating 2,500,000 cubic feet of gas daily produced water with the condensate at various points as follows:

*Gallons of water drained from various points at California plant in 24 hours.*

	Gallons.
From low-pressure accumulator.....	200
From high-pressure accumulator.....	50
From final double-pipe coil.....	25
From storage tank.....	65
Total.....	340

This quantity of water was equal to between 5 and 6 per cent of the condensate produced.

**CARBON DIOXIDE.**

The proportion of carbon dioxide in natural gas used in compression plants varies widely. As much as 30 per cent has been found in both the Mid-Continent and California fields. So large a proportion is unusual, but percentages up to 10 are not uncommon in California fields, and in some districts in Oklahoma.

Nitrogen is found in the natural gas in some districts, as noted by Burrell,<sup>a</sup> but was not found in gas fields visited and sampled by the writer, except as introduced into the gas with air.

**SULPHUR COMPOUNDS.**

Hydrogen sulphide or other gaseous sulphur compounds, usually called "sulphur gas," is found in many of the fields producing casing-head gas. However, only the gas from small areas of these fields contains sulphur in such quantities as to be a decidedly detrimental factor in treatment of gas for its gasoline content.

Plants in the southern Illinois field are troubled by sulphur compounds more generally than those in any other district as a whole. A plant in the Santa Maria and one in the Salt Lake field in California report sulphur trouble, but such contamination is local and is not characteristic of those fields as a whole.

<sup>a</sup> Burrell, G. A., Selbert, F. M., and Oberfell, G. G., The condensation of gasoline from natural gas: Bull. 88, Bureau of Mines, 1915, pp. 21-22.

**GENERAL EFFECTS ON COMPRESSION TREATMENT.**

The gases named, with the exception of hydrogen sulphide, are inert chemically through all the stages of the compression process. Physically they affect plant practice in two ways. They cut down the volume of productive gas treated or absorb power for which no return is possible; they complicate the problem of partial pressures by requiring higher pressures for the gas as a whole in order to bring any one of the condensable fractions to its critical pressure, thus again necessitating more power.

**EFFECTS OF SULPHUR AND METHODS OF REMOVAL.**

In the Lawrenceville district of southern Illinois the proportion of sulphur in the natural gas is so large as to be a decided detriment to treatment by compression. Beside destroying the pipes in cooling coils, so much of the hydrogen sulphide is dissolved in the condensate, either as a gas or as a liquid, that resort is had to steam distilling in order to free the condensate from this objectionable content. The odor of even small proportions is noticeable, making the product unsalable, and such gasoline, if used in motors, will attack the pistons and cylinders, causing pitting and roughness. By use of the steam stills in that district between one-third and one-half of the total plant product is lost as noncondensable vapor passing through the cooling coils after the stills.

The two California plants, mentioned previously, report no trouble with sulphur in the condensate, but do have trouble from the sulphur gas attacking and eating out cooling coils. At the plant in the Salt Lake field 2-inch steel pipes will often be eaten through, particularly at a low point in the coil, in 3 or 4 months. The plant in the Santa Maria field found that 2-inch steel pipe, costing 12 cents per foot (May, 1916), in the cooling towers lasted 6 months, and that wrought-iron pipes, costing 19 cents per foot at that time, lasted 13 months or more.

No compressor or engine trouble traceable to hydrogen sulphide gas was reported at any of the above plants, possibly because of the film of lubricating oil constantly protecting the pistons and cylinders.

The elimination of sulphur gas has long been a part of the treatment for purifying manufactured or artificial gas. The artificial gas made from coal or oil is passed through a scrubber containing iron oxide (common hematite iron ore). A chemical reaction takes place, the sulphur uniting with the iron to form iron sulphide, which is a solid at normal temperatures, thus removing the sulphur from the gas. When the iron becomes slow in its action, or so largely converted to the sulphide as to be inefficient in removing the sulphur, it is discharged and a fresh charge placed in the scrubber. The scrubbers are generally operated in pairs to allow one to be cut out

during periods of cleaning and charging. The discharged iron ore is thrown out on the ground, where it is oxidized by the action of the sun and the atmosphere, and again used as a fresh charge for the scrubbers.

The sulphur compounds originating in gas act chemically as an acid in much the same way as the acid fumes that are carried in still vapors in oil refining.

An eastern refinery which compresses the uncondensed still vapors and gases to further remove condensable fractions uses a series of water and caustic washes in scrubbing tanks to remove acid impurities, as described on page 68.

To overcome the action of sulphur gas which was eating out the high-pressure coils of a compression plant, Mr. D. L. Newton, general superintendent of the Hurley Smith Gasoline Co., of Los Angeles, Cal., designed and successfully operated a scrubber and cooler combined which removed the objectionable gases and also took the place of the high-pressure water-cooled coils.

Figure 10 shows the general design and method of operation of the scrubber. After this treatment the gas was refrigerated in double-pipe coils of usual construction without causing their destruction or forming incrustations of sulphur compounds.

The following data, regarding the operation of the scrubber, was also kindly furnished by Mr. Newton:

*Data on scrubber for removing sulphur.*

Capacity, 300,000 cubic feet per day at a pressure of 250 pounds.

Temperature of gas entering scrubber, 190° F.

Temperature of gas leaving scrubber, 78° F.

Temperature of water entering scrubber, 72° F.

Temperature of water leaving scrubber, 78° F.

Volume of water used per 24 hours, 15,000 gallons.

The water used in the scrubber, after being automatically trapped from the separator, was returned to the top of the cooling tower for cooling in the usual way. Owing to aeration and the lowered pressure, the greater part of the sulphur gas passed off into the air, the cooled water being returned to the scrubber by a pump at a pressure slightly higher than that at which the gas entered the scrubber.

### CONDENSATE.

#### LINE DRIP.

The first condensate produced in treating gas by compression is the small quantity of rather heavy and often discolored naphtha accumulating in the pipe-line drips. After this condensate has been collected and cleaned by filtering or distilling it is mixed with the balance of the plant product, giving the mixture a lower gravity and vapor tension and helping to stabilize the "wild" condensate from other parts of the plant.

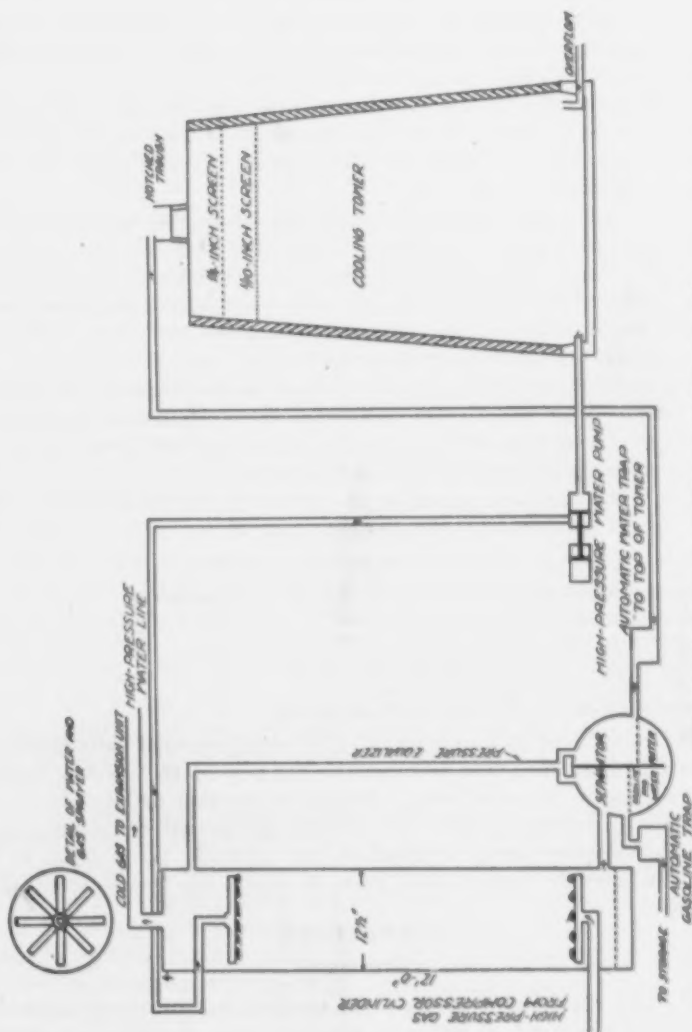


FIGURE 10.—Scrubber used to cool gas and remove sulphur compounds.

**CONDENSATE FROM LOW-PRESSURE COILS.**

The second condensate is that collected in the low-pressure accumulator tanks; its proportion to the whole product varies between nothing and 50 per cent, and in average plant practice between 10 and 30 per cent. The gravity varies around 60° B. and the vapor tension between 1 and 3 pounds. Such condensate makes an ideal motor fuel just as it comes from the coils, but is usually mixed before leaving the plant with the other products either in "make tanks" or in storage tanks, having the same tendency as the line drip to improve the product as a whole.

The following distillation represents approximately an average first-stage condensate as produced in California practice:

*Results of fractional distillation of first-compression naphtha (condensate).*

[Analyst, Paul W. Prutsman.]

Still charged with 500 c. c., at 62° B.; started over at 106° F.

Cut No.	Amount of cut.	Final temper- ature.	Gravity of cut.	Per cent.
	c. c.	°F.	°B.	
1.....	50	174	76.8	10
2.....	50	192	71.8	10
3.....	50	206	66.5	10
4.....	50	218	63.1	10
5.....	50	228	60.8	10
6.....	50	241	58.4	10
7.....	50	254	56.5	10
8.....	50	272	54.8	10
9.....	50	312	51.4	10
.....	16	352	.....	.....

Total amount distilled off and collected, 466 c. c.; final temperature, 352° F. Loss, 8 per cent.

Eastern or Mid-Continent products with these end points would have a specific gravity between 5° and 9° B. higher, but the sample distilled is fairly representative of the first-stage product of two-stage plants.

**CONDENSATE FROM HIGH-PRESSURE COILS.**

Next in the series of condensates collected is that obtained from the gas under the maximum pressure used in any given plant and at temperatures developed by water cooling.

In average plant practice the condensate precipitated and collected at this point represents the principal bulk of the total recovery, seldom being less than 30 per cent of the total product even in plants using expansion units, and at times reaching 100 per cent, as in all single-stage practice and in some two-stage installations. At plant 22, which compressed the gas to 300 pounds in two stages and cooled it to 60° F. in the high-pressure coils, all the condensate was produced at this point, the product having a gravity of 96° B.

The specific gravity of the high-stage condensate is between 65° B. and 100° B., averaging in eastern fields approximately 85° B., in Oklahoma 78° B., and in California 72° B.

As formed in the accumulator tank this condensate is "wild," owing to the absence of low-gravity fractions, to dissolved gas, and to hydrocarbons that can be held as liquids only under high pressure at the temperatures attained in the water-cooled coils. As the pressure is reduced by the automatic traps or in the transfer from accumulators to the "make" or storage tanks, the lighter fractions and dissolved gases immediately start coming off and build up pressure in the tank containing them or escape to the atmosphere. For these reasons the condensate from high-pressure accumulators is usually discharged to tanks containing the heavier fractions precipitated in other coils and is often blended in there, or before it reaches the storage tanks.

#### CONDENSATE FROM EXPANSION COIL.

Table 6 (p. 45) gives the gravity and percentage of this condensate as obtained in plants using expansion units. The condensate has much the same physical characteristics as the condensate from high-pressure water-cooled coils and is handled and treated in the same way.

#### CONDENSATE FROM EXPANSION EXHAUST.

As stated and discussed under expansion units, plant 6 collects a high-gravity (105° B.) condensate in an accumulator close-connected to the exhaust of the second-stage expansion cylinder. This condensate is stored separately and held under pressure until blended with large quantities of 48° B. naphtha.

At the plant shown in Plates VIII, A (p. 46), and IX, A (p. 47), the condensate collected in the expansion-exhaust accumulator tank is mixed with the balance of the plant product and the mixture is shipped, without blending, by auto trucks.

#### CONDENSABLE HYDROCARBON FRACTIONS IN NATURAL GAS.

From these data and from points previously brought out, it appears that different natural gas from different fields containing the same quantity of condensable vapors seldom contains the same percentages of the various hydrocarbon fractions entering into the composition of gasoline.

This, in part at least, explains the wide variation in the gravity and amount of product obtained under similar conditions of temperature and pressure in different plants treating gas from different parts of the same field or from different fields.

From the study made by the writer of the conditions as found in fields throughout the United States, the explanation seems to lie in

any one, or a combination, of three conditions—the fractional composition of the gasoline content of the oil from which the gas comes, the temperature of the oil, and the pressure on the oil at the time of releasing the vapors to the gas.

Under the first condition, as demonstrated by refinery results and fractionations, it has been shown that distillates of the same gravity and the same or different end points vary widely in the content of the different fractions obtained between the same temperature limits. The oil containing only certain fractions of the light hydrocarbons can give up only these fractions to the gas, regardless of the temperature or pressure.

As the temperature of the oil varies in different fields and at different localities and depths in the same field, the factor of temperature must bear directly on the fractions of distillates contained in the gas. At constant pressures and temperatures only certain of the fractions will vaporize and be carried into the gas, leaving other fractions as liquids with the oil.

In any oil field, rock pressures decline as the supply of gas and oil is reduced. As the boiling or vaporizing temperatures of liquids are lowered by reduced pressures, this condition of lower pressures allows the less volatile, heavier fractions to vaporize if the temperature remains constant, thus adding to the gasoline content of the gas. As the rock pressure becomes low and the rate of decline so slow as to be practically stationary, and vapors no longer distill naturally from the oil left in the ground, resort is had to vacuum pumps to increase the flow of oil and gas, thus permitting the vapors to distill from the oil in the sands. Under this method is produced the gas of which the greatest proportion is condensable, as in eastern compression practice.

The widely varying conditions under which casing-head gas obtains its charge of condensable vapors, the variable content of lighter hydrocarbons in the oil in the ground, and the direct effects of the law of partial pressures on the products precipitated at the different stages in plant practice will to no small extent account for the great differences in plant practice as to pressures and temperatures used, and also for the variations in the percentage and gravity of the condensates of successive plant stages and the gravity and vapor tensions of the product of plants in different fields.

#### VARIATIONS IN PLANT PRODUCT.

The quantity and the gravity of condensates from different plants is shown in Table 2 (p. 29). These figures represent the average quantity and the average gravity, but both vary considerably from day to day and month to month. Many theories have been advanced to account for these variations, but none of them is satisfactory in analyzing the variations as they actually occur in plant production.

From the known effects of temperature on gas containing condensable vapors, it is reasonable to believe that atmospheric conditions, changing as they do with the seasons, explain in part the differences noticed from time to time in the yields from the different stages and in the total plant output. Many operators state that a larger proportion of condensate of higher gravity is collected in the low-stage accumulator tanks in cold weather. This same result is noticed also in the quantity and gravity of "line distillate" precipitated in gathering systems and collected in the line drips. In many plants the total production increases in winter, but this is not always true, as in plants using low temperatures, produced by expansion engines. It is often found that cold weather condenses some vapor in the gathering lines, and unless this is collected and added to the total an actual decrease in plant production results. It has been shown by several records of plant production that the yield decreases on a cold day and increases to a point well above the average on the first warm day after a period of cold weather. A plant in a hot climate on keeping records of the variations in production and attempting to determine the factors concerned, found that in general the production usually varied from day to day with the temperature, but at times varied in the opposite direction. The operators believed that the cause was to be found in a combination of atmospheric conditions, including temperature, barometric pressure, and humidity, which undoubtedly would affect evaporation and cooling of water used either in towers or sprays. To what extent these conditions control the production or account for the variations in it, it is not possible to say.

Another plant that had been treating the same quantity of gas daily from the same wells for nearly three years suddenly increased its production from 5,200 to 5,900 gallons per day, averaged over a period of one month, no changes having been made in plant practice. The operators believed that the increase was due to some change in underground conditions that permitted the gas to be enriched. Exceedingly careful records have been kept at this plant, and these show that the daily production usually varied between 100 and 300 gallons. The sudden increase of 700 gallons daily over a period of one month has not been satisfactorily accounted for. The gravity of the condensate remained constant.

Usually the gravity of the total plant product increases in cold weather, owing to the separation of part of the heavy fractions in the gathering lines and to the condensation of lighter fractions in the water-cooled coils.

It appears that a satisfactory explanation of the causes of variation in production will not be arrived at until complete records of the variations in yield and gravity of the condensate, in the tem-

peratures and pressures used, and in atmospheric conditions are kept at different plants so these data can be studied with reference to each other and a comparison made of the results obtained at a number of plants in different fields and under different climatic conditions.

## THE USE OF AMMONIA AS AN AUXILIARY COOLING AGENT.

### DESCRIPTION OF PLANT IN FULLERTON FIELD.

A detailed description of plant 2, which is situated in the Fullerton, California, field follows: The casing-head gas being treated in the plant is brought from 20 oil wells through 3,500 feet of 2, 4, and 6 inch lines, 2-inch lead lines from the different wells being connected with the main gathering lines of 4 and 6 inches diameter.

The 6-inch main discharges the gas at the plant into a 6-foot by 10-foot steel receiver which also acts as a scrubber and accumulating tank for "line distillate," removing from the gas the crude oil, the condensate formed in the pipe lines, and dirt. The receiver is connected to a single-stage, 40-horsepower, noncondensing, direct-connected air compressor with 12 by 16 by 12 inch cylinders. The compressor is steam driven, rate 200 revolutions per minute, and takes steam at a pressure of 110 pounds. The compressor holds on the intake receiver a 10-inch vacuum that brings the gas through the pipe lines from the well, but is practically dissipated by friction and leakage, leaving the pressure at the wells at or near zero.

### REFRIGERATION "STILLS."

Seven "stills," or coil heat interchangers are used in cooling the gas. (See fig. 11.) Each still consists of 1,260 feet of 1½-inch, extra heavy pipe coiled, with return bends, inside of a 12-inch tube 80 feet long laid at a slope of 1 inch in 10 feet, or 8 inches in all, to collect the condensate at one point, thence it is drained into storage or "make" tanks. The seven stills are parallel with one another, all draining in the same direction. Four of the stills, in which ammonia is used as the refrigerant, are insulated by about 1 foot of sawdust contained in a wooden housing about the tube; the other three coils, which treat the hot gas from the compressor, are not insulated and are exposed to the air, the hot gas flowing in the 12-inch tube and the cold gas in the 1½-inch coils.

The compressor discharges the gas at a pressure of 37 pounds and a temperature of 150° F. into stills 1 and 2, connected in parallel. These stills discharge into the outer tube of still 3, the gas from this still flowing through the outer tube of each of the other stills in succession. The dry, cold gas from still 7, in which the lowest temperature, approximately 10° F., and the final precipitation of condensate are obtained, is discharged into a pipe which returns it to the 1½-inch



*Temperature of gas and gravity of condensate from each of the seven stills.*

	Temperature of gas in each still, °F.	Gravity of condensate, °B.
Stills 1 and 2.....	150	62
Still 3.....	75	65
Still 4.....	50	73
Still 5.....	40	78
Still 6.....	30	85
Still 7.....	10	95

#### COOLING SURFACE.

In each still the 1,260 feet of 1½-inch pipe exposes a radiating surface of 412 square feet to the wet gas being refrigerated in the 12-inch tube, or 2,884 square feet in the entire set of seven stills. Of the 2,884 square feet of surface area, 1,648 feet are cooled by ammonia in stills 4, 5, 6, and 7, and 1,236 feet by cold, dry gas in stills 1, 2, and 3 that has passed through the entire set of refrigerating tubes, giving a total of 8.24 square feet of cooling surface for each 1,000 cubic feet of gas treated per day.

#### COLLECTING CONDENSATE.

The condensate from each still is drawn off continually from the bottom at the low end through a 1-inch pipe manifold to a cone-bottom settling tank in which the gasoline and the water separate by gravity, the water being drawn off at the bottom and the condensate flowing to the storage tanks. The 1-inch manifold and the bottom of each still are connected by a ½-inch gage glass through which the condensate precipitated in that still flows, allowing the operator to see at all times the flow of condensate before it is mixed with that of other stills. By this arrangement he can note, without stopping the plant, whether any discolored condensate is being discharged, or whether any one of the stills is not working properly.

#### AMMONIA CIRCUIT.

The ammonia used in refrigeration is compressed in the duplex compression cylinders of a 30-ton Stevens ice machine, direct-connected to a 125-horsepower, tandem-compound, steam-driven Corliss engine, with 10 by 20 by 12 inch cylinders taking steam at 110 pounds and operating at 80 revolutions per minute.

From the compression cylinders the ammonia gas is discharged at a pressure of 150 pounds to the inside 1½-inch pipe of a double-pipe water-cooled coil, the water circulating through the outside 2-inch pipe. This coil unit consists of three sets of double-pipe return-bend coils eight pipes high and 20 feet long. Water circulated by a centrifugal pump flows from the coils over a cooling tower, collects in the tower basin and is returned to the coils by the pump at a temperature somewhat below that of the atmosphere. From the inside coils the ammonia flows through a ½-inch pipe to a receiver or storage tank,

made of 8-inch casing 15 feet long, thence through an expansion valve to the four stills, connected in parallel as described above, at a pressure of 15 pounds and a temperature of 10° F. The ammonia is discharged from the four stills into a pipe manifold leading to the ammonia compressor, to be returned through the circuit. Ammonia lost in the pipes and stills by leaks and breaks is replaced from time to time from a steel bottle of compressed ammonia connected to the ammonia circuit as indicated in figure 11.

#### DESCRIPTION OF PLANT IN SANTA MARIA FIELD.

Plant 10 uses ammonia as an auxiliary cooling agent in addition to water cooling and expansion cooling. At this plant the gas passes through water-cooled coils after each of the three stages of compression, then through a coil cooled with brine refrigerated by ammonia from an ice-making machine, and then through double-pipe coils cooled by expanding gas.

The gas, after being cooled in the high-pressure (250 pounds) water-cooled coils, is led through a continuous coil of 4-inch pipe 450 feet in length, inclosed in a wooden tank or basin built with double walls and bottoms, 9 inches apart, the space between the walls being packed with sawdust. This coil is cooled with brine. The tank bottom has enough slope to drain the brine toward one end, whence it is pumped for recirculation through the unit. The brine (calcium-chloride solution) is brought in contact with the expanded ammonia by the use of coils in an iron tank, reducing the temperature of the brine to about 32° F. From this cooling tank the brine is circulated by a centrifugal pump to the gas-cooling coils, where it is discharged in such a way as to drip over the coil and collect at the low end of the basin, to be discharged again to the ammonia-cooled brine tank.

The gas discharged from the brine-cooled coils has a temperature of 32° to 34° F. The advantage claimed for this system is that the temperature produced by the brine cooling precipitates all the water vapor in the gas, thus preventing freezing of the double-pipe coils cooled by gas from the expansion engine. This is without doubt an advantage to be desired, but it could probably be obtained in this plant, as in other plants, by a more thorough use of expanded gas in coils of greater length and smaller diameter, or by using the expanded gas in two sets of coils and cooling the high-pressure gas in two stages, the first stage using the expanded gas from the second-stage coils. The first coils being partly warmed, would precipitate only water if the temperature were properly adjusted as is done in other plants described. The ammonia compressor and coils, also the brine circulating pumps, coils, and cooler could be abandoned, and only the extra set of expansion coils put in to replace them.

The brine and ammonia cooling installation is cumbersome, inefficient, and requires more time and care than the result warrants.

## TREATMENT OF STILL VAPORS BY COMPRESSION AT A REFINERY IN NEW JERSEY.

### VAPORS TREATED.

The gases treated in the compression plant, designated as plant 80 in the tables, at a refinery in New Jersey are those from all cooling coils in which the lighter fractions of crude oil and naphthas from both fire and steam stills are being condensed. Figure 12 shows (at the extreme left) the condenser box and coils from which the uncondensed gases and vapors treated by compression originate. From that point each unit and process is shown diagrammatically to the point at which the condensate and fixed gases are finally separated

### COLLECTING VAPORS.

At the discharge pipe of the coils in water boxes a T connection is made, the condensate flowing down into pipes connected with the "tail house" and "look boxes"; the gases and vapors rise through a vertical pipe 6 feet high to the 8 or 10 inch collecting pipe called the gas main. The gas main is also connected with a 2-inch pipe to the condensate line at a point about 2 feet back of the look boxes, and with a 2-inch pipe leading from the top of the look boxes, both of which are used to relieve the pressure and collect vapors that have been carried past the first stage of separation, or have formed in the condensate flow lines. From the top of the gas main the gas is led through 12-inch pipe connections past a butterfly valve, which regulates the vacuum held on the discharge pipes of the condenser coils, to a vertical steel receiving tank 15 feet in diameter and 18 feet high. In this tank the gas is given a preliminary scrubbing with sea water, removing part of the sulphur compounds, some heavy oils which have been carried through the stills, and a small quantity of discolored condensate of approximately 53° B. gravity. The 12-inch pipes leading to the receiver are taken out at the top of the gas main, instead of the bottom, so as to trap back any condensate formed in the main and allow it to flow down the 6-foot risers and back into the lines from the coils to the tail house with the rest of the condensates produced. The vacuum held and regulated by the butterfly valve, previously referred to, on the gas mains and on the discharge of the condenser coils is between 0.25 and 1 inch of mercury (2 to 8 ounces below atmospheric pressure). There is no gage between the butterfly valve and the blower that produces the vacuum, so no record of the pressure between these points is available. However, the writer was informed that a test had been made that showed a vacuum of 22 inches of mercury.

## SCRUBBING PROCESS.

From the receiving tank a 12-inch pipe carries the gas to a size 8 positive-pressure Root blower which holds the vacuum on the re-

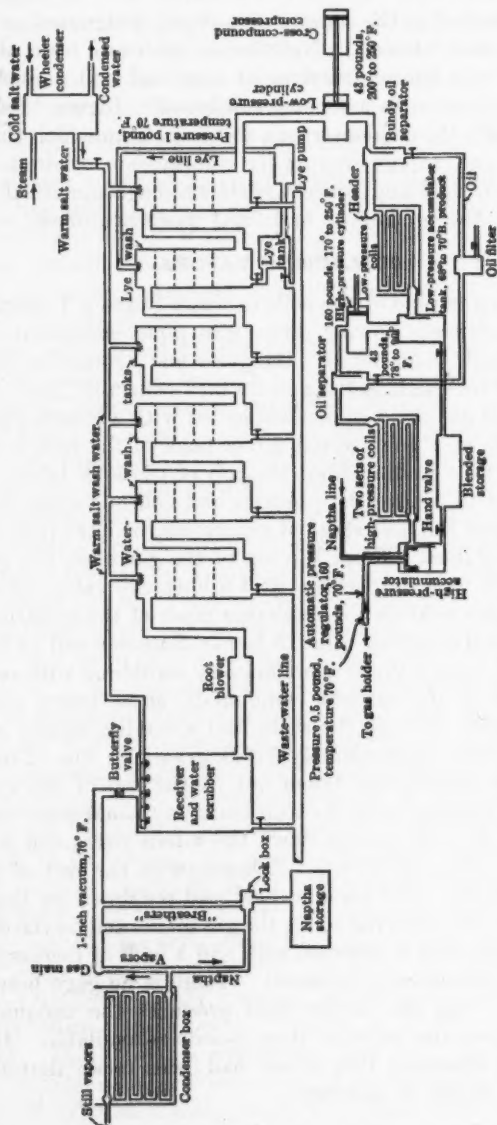


FIGURE 12.—Flow sheet of compression plant at a refinery in New Jersey.

ceiving tank and the gas mains and delivers the gas at a pressure of one pound to the scrubbers and the low-pressure compressor beyond

the scrubbers. From the blower the gas passes through six 4 by 20 foot vertical iron scrubbers connected in series. The connections are so made that by opening or closing valves, the scrubbers may be operated as two sets, in parallel, of three tanks connected in series. This arrangement was tried and abandoned in favor of the series of six. In each scrubber the gas enters at a point about two feet above the bottom, passes a series of wood baffles over which warm wash water or caustic solution is falling, and discharges at the top. The gas then passes through the next scrubber in the series.

In the first four scrubbers warm sea water, flowing over baffles countercurrent to the gas, is used to remove impurities, consisting chiefly of sulphur and sulphur compounds, from the gas. In the fifth scrubber a solution of sodium hydroxide (lye) with a specific gravity of 12° B. is circulated over the wood baffles, in the same manner as the water in the other tanks, to remove any acids contained in the gas. These impurities may originate either in the crude oil or in the refining of the various distillates from which vapors are taken for treatment by compression. The lye used, as received at the refinery from the manufacturer, is a 35° to 40° solution. It is transferred to one of four iron storage tanks and diluted to the strength used in the scrubber. After being circulated until it will not neutralize the acid in the gases and becomes foul, it is wasted and fresh solution is put into circulation.

In the sixth scrubber warm salt water is used to remove any traces of caustic remaining in the gas. Caustic in the gas would react with the lubricating oils in the compressor cylinders, causing cutting of the cylinders or an excessive waste of oil.

The gas in passing through the six scrubbers is warmed 2° to 5° F. by the warm water used as the scrubbing medium. This warm salt water is the discharge from the Wheeler condenser used in connection with the low-pressure steam cylinder of the compressor. The fact that the water used is salt has nothing to do with the process. Sea water is used because it is the most available, the plant being situated on the Atlantic coast. No condensate is formed during the scrubbing. This would be anticipated because of the increased temperature of the gas due to the use of the warm condenser water. Both the water and the lye solution circulated through the scrubber tanks are handled by duplex pumps.

#### COMPRESSION AND COOLING.

From the sixth scrubber the gas is delivered at a pressure of 1 pound and a temperature of 70° F. to the low-pressure cylinder of the compressor, which discharges it at a pressure of 43 pounds and a temperature varying between 200° and 250° F.

Gas discharged from the low-pressure cylinder to the intermediate cooling coils is passed through a Bundy oil separator, which removes

lubricating oils carried over with hot gas and gasoline vapor from the compressor cylinder. The coils used are the water-cooled type submerged in a box, typical of refinery construction. The gas is divided in a header into six sets of return-bend coils of 3-inch pipe 10 feet long and six pipes high, totaling 360 feet of 3-inch pipe, exposing a radiating surface of 283 square feet, or 0.189 square foot per 1,000 cubic feet of gas treated per day. This is approximately one-third of the radiating area usually found in compression plants for the same service.

At the bottom of the coil the gas is again collected through a header and discharged into an accumulator tank in which 750 to 1,000 gallons of condensate is collected each day. The condensate varies in gravity according to weather conditions, averaging 68° B. in summer and 72° B. in winter. The product collected in this accumulator tank is forced into storage tanks by the working gas pressure as often as necessary and blended with the rest of the condensate. The gas leaving the coils has a temperature of 70° to 90° F., the high temperature probably being due to the small cooling area used at this plant.

At this temperature and pressure (70° to 90° F. and 43 pounds) the gas enters the high-pressure cylinder and is discharged at a pressure of 160 pounds and a temperature between 170° and 250° F. The gas is again led through a Bundy trap to separate lubricating oils, as previously described, and then to the high-pressure cooling coils, which are the same size and length as the intermediate coils used to cool the low-pressure gas, except that two sets are used in series in place of one, having twice the cooling area. The average temperature to which the gas is reduced in these coils is 70° F. and is the lowest temperature used in the treatment.

After the condensate and gas have been separated in the high-pressure accumulator tank the pressure is reduced through a valve to one-half pound and the gas discharged to a gas receiver in which gas is stored and used for fuel under boilers, stills, etc., in the plant.

#### BLENDING.

Blending at this plant is all done under a pressure of 160 pounds in the high-pressure accumulator tank, as follows:

Naphtha with a gravity of 53° B. is pumped through 1½-inch pipe in coil boxes and cooled to 70° F., then into the top of the high-pressure accumulator tank, and sprayed through the rising gas at a rate which gives a mixture containing approximately four parts of naphtha to one of condensate, or about 80 per cent naphtha. At regular intervals the mixture is drawn off into another tank containing the low-stage condensate, and the resulting mixture sampled and tested for gravity. If the gravity is found to be too high, more

naphtha is pumped into the accumulator tank, which lowers the gravity of the next batch drawn off into the storage tank and of all the blend in storage, or if the gravity was too low the proportion of naphtha pumped into the accumulator is cut down. From 4,000 to 5,000 gallons of raw condensate is made daily in the high-pressure coils, and this with the condensate from the low-pressure coils makes a total production of 5,000 to 6,000 gallons per day from treated gases and vapors. The raw condensate from the high-pressure coils has a gravity varying between 76° and 93° B. After blending with naphtha, the product has a gravity of 58° to 61° B.

The level of the mixture in the high-pressure accumulator tank is at all times kept above the discharge pipe from the coils, thus forcing all the gas to pass through the blended product. It is claimed that this method adds 250 to 500 gallons daily to the net production. Inasmuch as the blend is four parts naphtha to one of condensate, and the temperature of the gas in the coils is such as to leave part of the comparatively heavy gasoline fractions uncondensed, absorption of liquids from the gases or absorption of the gases themselves may reasonably take place. The general practice throughout the United States, however, is to remove the condensate from contact with the gas as soon as possible.

#### QUANTITY OF GAS TREATED, AND PRODUCTION.

The volume of gas treated is computed from the compressor displacement, and the record of engine revolutions with 5 per cent deducted for slippage. On this basis the gas passing through the plant varies between 1½ and 2 million cubic feet per day, and shows an average production of 3.09 gallons of condensate per 1,000 cubic feet of gas treated.

#### COMPRESSOR.

All gas compressed passes through a 2-stage Corliss-valve compressor, direct connected to a combination cross-compound, condensing Corliss engine; steam cylinders are 16 and 32 inches in diameter with 30-inch stroke. The compressor speed varies greatly, being dependent upon the amount of gas coming from the stills, which in turn depends upon the stage of distillation of oil at which the various stills are working.

#### SPECIAL FEATURES OF PLANT.

The noteworthy features of this compression plant are the scrubbers for removing sulphur and acid, the Root blower as a booster unit, the passing of gas through the condensate to bring about greater production of gasoline condensate by absorption, and the large amount of naphtha used in the blended product.

**MACHINES USED IN COMPRESSION PLANTS.**

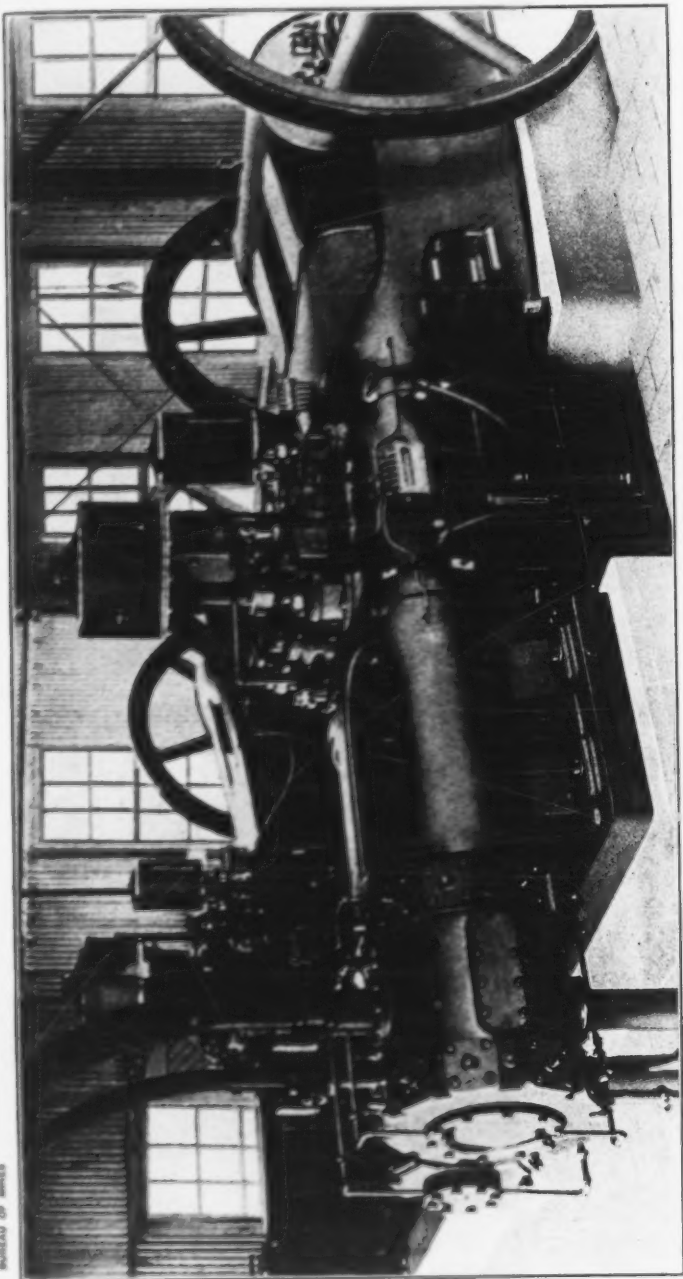
Table 7 shows the total rated horsepower used in gas compression in each of the plants listed, and the number of cubic feet of gas compressed per day by one rated horsepower.

TABLE 7.—*Rated horsepower and capacity of various plants.*

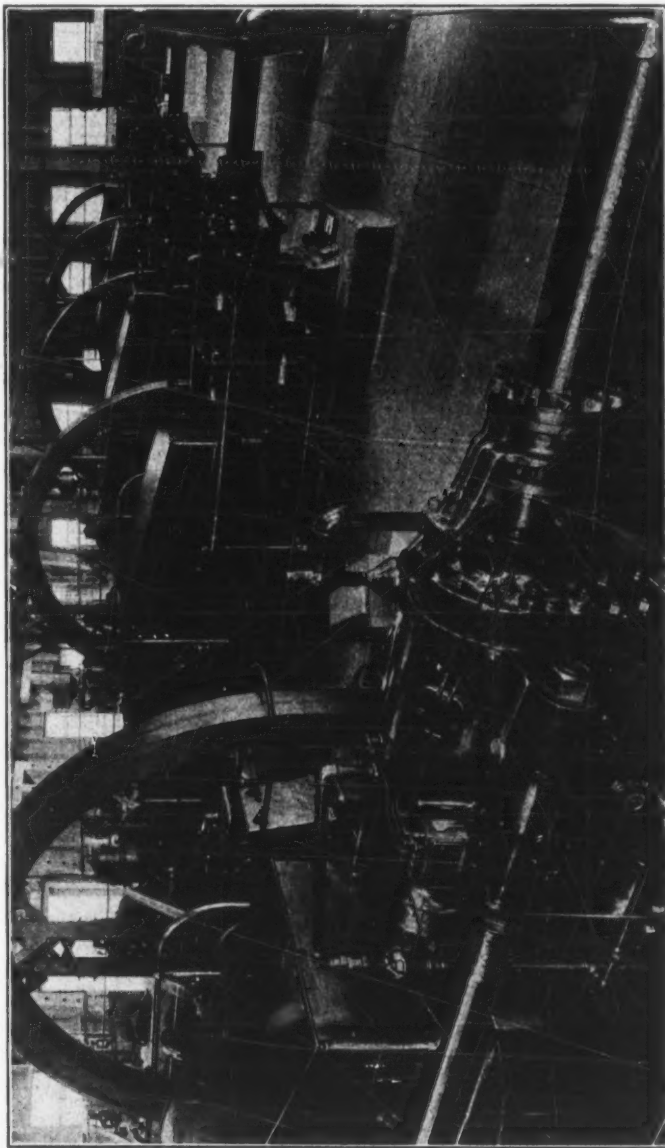
Plant No.	Total rated horsepower.	Cubic feet of gas compressed daily per horsepower.	Plant No.	Total rated horsepower.	Cubic feet of gas compressed daily per horsepower.
3	110	4,100	34	300	2,900
4	300	4,000	35	100	3,500
7	3,800	4,100	36	480	2,400
9	330	3,300	37	170	2,300
11	490	3,100	38	300	2,500
12	240	2,917	50	230	3,700
14	330	3,000	51	110	2,170
16	100	2,500	52	100	2,500
17	300	2,500	54	900	2,500
19	575	3,090	55	300	4,170
20	495	3,030	56	210	1,800
21	300	3,300	57	250	2,600
22	180	3,300	76	200	4,750
23	210	3,500	77	50	8,000
32	605	4,300	78	50	900
33	360	3,300	79	105	2,380

The quantity of gas compressed or treated per horsepower in the plants visited varies between wide limits. The chief causes for this variation are that the intake pressures vary widely and also the final pressures vary between 75 and 300 pounds. Many other factors in plant operation also affect the results, among which are the actual efficiency of the engine and compressor used, the temperature of the gas at different stages, the sizes and length of pipes through which the gas is forced, and the power used in driving pumps and line shafts, which in many plants is taken from the engine that drives the compressor. In plants where expansion engines are used to compress gas no attempt has been made to estimate or add the power delivered by such units.

The table shows that the average plant visited by the writer has 340 horsepower and treats approximately 3,250 cubic feet of gas per day for each rated horsepower installed. The conditions under which many of these plants are operating may be found in Tables 3, 4, and 5. Among operators who design plants and use the rated horsepower, rated compressor capacity, and atmospheric pressure at the intake, with a discharge pressure of 250 pounds, 4,000 cubic feet of gas daily per horsepower is used for preliminary estimates of the requirements of a plant to treat a given volume of gas. The final estimates necessarily must include all the items mentioned above, and also take into consideration all of the special conditions under which the plant in question is to operate.



TWO-STAGE DIRECT-CONNECTED COMPRESSOR AND GAS ENGINE.



FIVE 485 BRAKE-HORSEPOWER GAS ENGINES, FRONT-CONNECTED TO 15½-INCH COMPRESSOR CYLINDERS, AT A WEST VIRGINIA PLANT THAT COMPRESSES NATURAL GAS TO A PRESSURE OF 275 POUNDS GAGE DISCHARGE. IS FIELD END OF A 20-INCH PIPE LINE.

## ENGINES AND POWER.

Machines of practically all well-known manufacturers making gas engines or compressors have found their way into compression plants. One company which has done much pioneer work in both the laboratory and the field, tending to develop the natural-gas gasoline industry, has placed its engines, compressors, or both, in many plants in every field visited by the writer.

Plates XIII and XIV show engine installations at two compression plants.

Table 8 gives data on the motive power, types, and sizes of engines and compressors, method of connection, and the number of compressor units used in the plants visited.

In plant 24, electric motors have been installed to drive the compressors. Originally gas engines were used, but the gas being treated became so rich in gasoline content that not enough gas was discharged after treatment to operate the engines. The motors are set on the blocks that were used for engine beds and are in the same room with the compressors. Because of the possibility that gas may escape about the compressors and be ignited by sparks from the motors, this arrangement would appear to be dangerous practice, but thus far, owing probably to especial precautions in ventilation, no fires or explosions have occurred.

Plants 19, 20, and 21, all built in 1916, use vertical 4-cylinder, 4-cycle gas engines belted to the compressor units. While this type of machine has many moving parts which may get out of order, and a long crank shaft with its bearing to watch and tighten, it is giving complete satisfaction and is claimed to economize fuel and give an overload capacity of 25 per cent.

The 450-horsepower, direct-connected, 4-cycle, double-acting machines, although recognized as standard installations in gas-pumping plants throughout the country, have a number of disadvantages as units for the treatment of gas for gasoline extraction. A machine of this size should be installed only in plants that draw gas from areas large enough to insure a supply for a long term of years, and are of such capacity that one of these large units represents only a small fraction (10 to 20 per cent) of the total plant capacity, otherwise shutting down one unit unbalances the entire plant and materially reduces the output.

TABLE 8.—Data on engines and compressors

Plant No.	Engine.				
	Driven by—	Rated horsepower.	Type. <sup>a</sup>	Number of compressors used. <sup>b</sup>	Drive.
1	Steam.		Cross compound	2	Direct
2	do.	40	Straight line	2	do.
3	Gas	110	Straight-line, tandem, 2-cycle	1	Belted
4	do.	150	Twin cylinder	2	do.
	Steam.		Cross compound condensing.	1	Direct
	do.		Tandem compound condensing.	1	do.
6	do.		do.	1	do.
	High-pressure gas. <sup>c</sup>		Cross compound, 12 by 25 by 30.	1	do.
	Gas	450	Tandem, 4-cycle, double-acting.	2 low	do.
7	do.	450	do.	2 high	do.
	High-pressure gas. <sup>c</sup>		Cross compound	1	do.
8	Gas				do.
9	do.	80	Type VII, 16 by 20.	2 high and 2 low	do.
	High-pressure gas. <sup>c</sup>		Cross compound, 12 by 18 by 10.	1	do.
	Steam.		Cross compound, 12 by 20 by 12.	2	do.
10	do.		Simple, 12 by 12.	1	do.
	High-pressure gas. <sup>c</sup>		do.	1	do.
11	Gas	80	Type VII, 16 by 20.	6, 3 high and 3 low	do.
	High-pressure gas. <sup>c</sup>	80	Simple, 12 by 12.	1	do.
12	Gas	80	Type VII, 16 by 20.	4, 2 high and 2 low	do.
	High-pressure gas. <sup>c</sup>		Drilling engine, 9 by 12.	1	Belted to pump.
14	Gas	110	Twin	3	Belted
	High-pressure gas. <sup>c</sup>		Simple, 10 by 12.	1	Direct
16	Gas	80	Type VII, 12½ by 18.	2, 1 high and 1 low	do.
	High-pressure gas. <sup>c</sup>		Simple, 10 by 12.		do.
17	Gas	150	Twin cylinder	2	Belted
	High-pressure gas. <sup>c</sup>		Simple, 12 by 11.	1	Direct
	Gas	175	Vertical, 4-cylinder, 4-cycle.	3	Belted
19	High-pressure gas. <sup>c</sup>		Duplex pump, 10 by 12 by 6.	2	
20	Gas	165	Vertical, 4-cylinder, 4-cycle.	4	do.
21	do.	180	do.	4	do.
22	do.	Two 40	Type VII.	4, 2 high and 2 low	Direct
23	do.	Two 50	Single cylinder	1	Belted
24	Electricity	25	Motor	2	do.
26	Gas	50	Type VII.	2	Direct
27	do.	85-100	Horizontal	2	Belted
28	do.	100	do.	1	do.
29	do.	80	Single cylinder	1	do.
30	do.	70	do.	2	do.
31	do.	110	Twin	2	do.
32	do.	165	do.	9, 4 running.	do.
33	High-pressure gas. <sup>c</sup>		Cross compound, 12 by 19 by 18.	1	Direct
	Gas	Eight 50	Type VII.	10, 6 high and 5 low	do.
33	do.	Two 80	do.		do.
	High-pressure gas. <sup>c</sup>		Cross compound, 14 by 12 by 12.	1	do.
34	Gas	80	Type VII, 13½ by 18.	6, 3 high and 3 low	do.
37	do.	70	Single cylinder	1	Belted
	do.	80	Type VII, 13½ by 18.	2, 1 high and 1 low	Direct
38	do.	80	Single cylinder, 13½ by 18.	6, 3 high and 3 low	do.
50	do.	80	Type VIII, 16 by 20.	1	do.
51	do.	110	Twin-cylinder	1	Belted
52	do.	50	Type VII, 13½ by 18.	2, 1 high and 1 low	Direct

<sup>a</sup> Figures show size of cylinder in inches.<sup>b</sup> In this column "low" refers to low pressure, "high" to high pressure.

used at various compression plants.

Compressor.			Rated speed (r. p. m.).	Remarks.
Description.	Size of cylinder (inches).			
	Low-pressure cylinder.	High-pressure cylinder.		
2-stage.....	21 by 24.....	9½ by 24.....	62	Two 300-hp. Sterling and four 150-hp. Erie boilers used.
Single-stage.....	12 by 16.....		200	
2-stage.....	13½ by 14.....	6½ by 14.....	160	
do.....	16 by 16.....	8 by 16.....	180	
2-stage.....	20 by 24.....	9½ by 24.....	125	
do.....	15 by 24.....	7 by 24.....	145	
do.....	15 by 16.....	7½ by 16.....	115	
do.....	24 by 30.....	12 by 30.....	38	
Single-stage.....	31 by 36.....		125	
do.....			125	
Single-stage (duplex).....	Two 22 by 16.....	15½ by 36.....		
Single-stage.....	14 by 20.....	7½ by 20.....	200	
2-stage.....	16 by 10.....	8 by 10.....	100	
do.....	20 by 12.....	12 by 12.....		Used as low and intermediate at 12 pounds and 80 pounds.
Single-stage.....		8 by 12.....	Varied.	Used as high at 250 pounds.
do.....	14 by 12.....			Used as air compressor.
do.....	Three 14 by 20.....	7½ by 20.....	180	
do.....	14 by 12.....		145	Pumps dry gas at 60 pounds.
do.....	Two 7 by 20.....	Two 14 by 20.....	190	
2-stage.....	13 by 14.....	6½ by 14.....	170	
2-stage, tandem.....	8 by 12.....	4 by 12.....	200	
Single-stage.....	11 by 18.....	5½ by 18.....	180	
do.....	12 by 12.....			
2-stage.....	16 by 16.....	8 by 16.....	150	
Single-stage.....	20 by 11.....		78	
2-stage.....	16 by 16.....	8 by 16.....	158	Engine speed, 300 revolutions per minute.
do.....				Water discharge throttled to 100 pounds.
do.....	16 by 16.....	8 by 16.....		Drilling engine, 10 by 12-inch cylinder, used as expansion engine.
do.....	16 by 16.....	8 by 16.....	150	Engine speed, 275 revolutions per minute.
Single-stage.....				Drilling engine, 10½ by 12-inch cylinders, used as expansion engine.
2-stage.....	11 by 15.....	7 by 15.....	115	
do.....	14 by 10.....	7½ by 10.....	120	
Single-stage (to 150 pounds).....			180	
2-stage.....	12½ by 14.....	6 by 14.....	180	
do.....	12½ by 14.....	6 by 14.....	180	
do.....	10½ by 12.....	5½ by 12.....	180	
do.....			180	
do.....	14 by 14.....	7 by 14.....	180	
do.....	16 by 16.....	8 by 16.....	180	
Single-stage (duplex).....	18 by 18.....		180	
Single stage.....	Eight 12 by 18.....	Eight 6½ by 18.....		Feather valves on compressor.
Single-stage (duplex).....	Two 14 by 20.....	Two 7 by 20.....	200	
do.....	14 by 12.....			
do.....	12 by 18.....	9 by 18.....	100	
2-stage.....	12 by 12.....	6 by 12.....	180	
Single-stage.....	10 by 18.....	5½ by 18.....	180	
do.....	12 by 18.....	6 by 18.....	180	
do.....	14 by 20.....	7 by 20.....	180	
2-stage.....	13 by 14.....	6 by 14.....	160	
Single-stage.....	12 by 18.....	6 by 18.....	180	

\* Expansion engine operated by expanding high-pressure, treated gas through it.

TABLE 8.—Data on engines and compressors

Plant No.	Engine.				
	Driven by—	Rated horsepower.	Type.	Number of compressors used.	Drive.
53.....	{ Gas.....	{ <sup>a</sup> 80	Type VII.....	2, 1 high and 1 low....	Direct.....
	{ do.....	{ <sup>b</sup> 50	Type VIII.....	do.....	do.....
	{ do.....	150	Twin.....	1.....	Belted.....
	{ do.....	50	2-cylinder, tandem.....	1.....	do.....
54.....	{ do.....	150	Type VII.....	6, 3 high and 3 low....	Direct.....
	{ do.....	150	Twin-cylinder.....	2.....	Belted.....
55.....	do.....	50	do.....	2.....	do.....
56.....	do.....	50	Type VIII.....	6, 3 high and 3 low....	Direct.....
57.....	do.....	70	Single-cylinder.....	3.....	Belted.....
58.....	do.....	70	do.....	5.....	do.....
59.....	do.....	50	Type VIII.....	.....	Direct.....
60.....	do.....	50	do.....	.....	do.....
61.....	do.....	50	do.....	.....	{ do.....
62.....	do.....	50	Type VIII.....	.....	{ Belted.....
63.....	do.....	50	Type VIII, 13 $\frac{1}{2}$ by 18.....	.....	do.....
76.....	{ High-pres- sure gas. <sup>c</sup>	50	Duplex, 13 $\frac{1}{2}$ by 18.....	1.....	do.....
77.....	{ Gas.....	50	Type VIII.....	.....	do.....
	{ High-pres- sure gas. <sup>c</sup>	50	do.....	.....	do.....
78.....	{ Gas.....	50	Pump, 10 by 6 by 12.....	1.....	Direct.....
79.....	do.....	35	Single cylinder.....	2.....	Belted.....
80.....	Steam.....	.....	Cross compound, Corliss, 16 by 32 by 30.....	1.....	Direct.....

<sup>a</sup> Low pressure.<sup>b</sup> High pressure.

used at various compression plants—Continued.

Compressor.			Rated speed (r. p. m.).	Remarks.
Description.	Size of cylinder (inches).			
	Low-pressure cylinder.	High-pressure cylinder.		
Single-stage .....				
do .....				
2-stage .....	15½ by 16 .....	7½ by 16 .....		
do .....	14 by 14 .....	6½ by 14 .....		
Single-stage .....	11 by 18 .....	6 by 18 .....	180	
2-stage .....	16 by 16 .....	7 by 16 .....	180	
do .....	16 by 16 .....	7 by 16 .....	180	
Single-stage .....	11 by 18 .....	5½ by 18 .....	180	
2-stage .....	12 by 12 .....	6 by 12 .....	180	
do .....	12 by 12 .....	6 by 12 .....	180	
.....				
.....				
Single-stage .....	11½ by 18 .....			
2-stage .....				Compresses air in two stages to 35 pounds.
Single-stage .....	11½ by 18 .....			
do .....				
.....	11½ by 18 .....			
2-stage .....	12 by 12 .....	6 by 12 .....		Feather valves on compressor.
do .....	25 by 30 .....	13 by 30 .....		Corliss valves on compressor.

c Expansion engine operated by expanding high-pressure, treated gas through it.

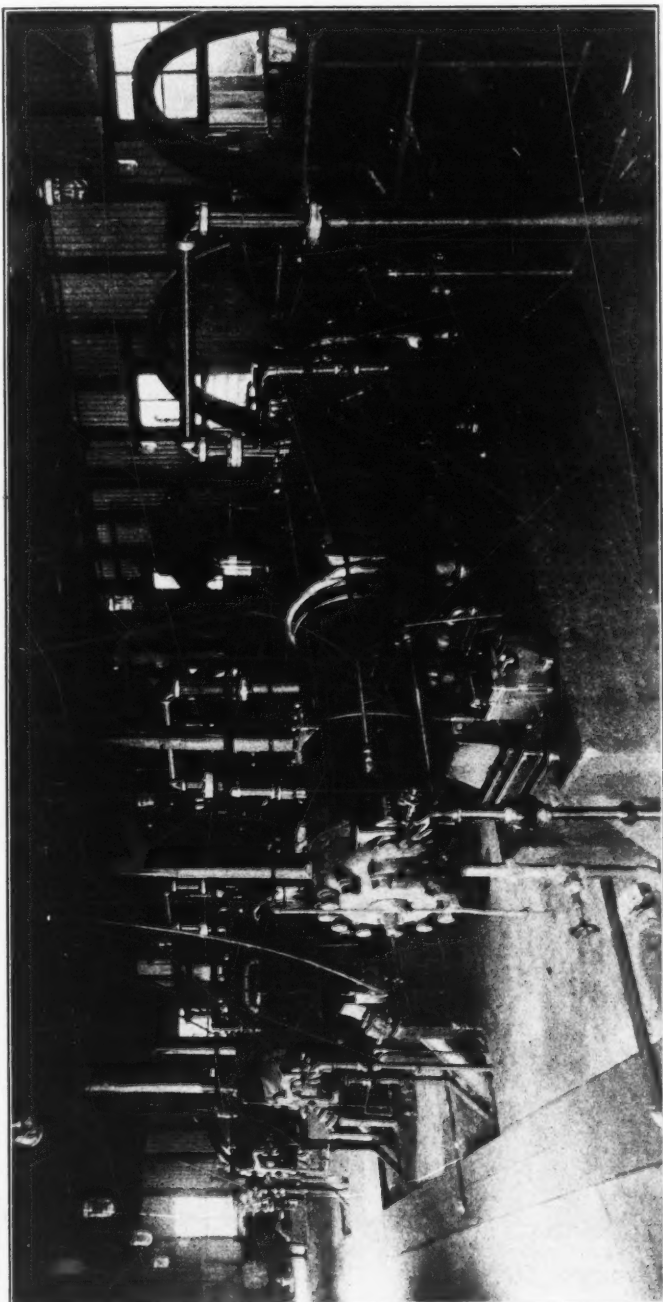
In the casing-head gasoline industry the gas supply from a given area is expected to decline and the pressure necessary to precipitate the condensable product usually becomes lower as the gas becomes richer. If all the power capacity thus relieved from duty is not used to increase the vacuums held on the lines, it is obvious that to remove one unit to another locality would be desirable. If one unit represented half the total plant capacity, it would be necessary to wait until the available supply of gas had been reduced 50 per cent before that unit could be transferred, but if that unit represented only 20 per cent of the plant capacity it could be removed when the gas had fallen off that amount; also it would be a much simpler matter to find a location or sale for a machine of one-half million feet capacity than for a machine requiring from three to four million feet per day. Another argument for machines of smaller capacity is the size and weight of parts which under the usual transportation conditions in oil fields is a serious problem in plant construction.

Both direct-connected (Pl. XV) and belted units are being installed in compression plants using the usual smaller units. However, many operators of wide experience prefer the belted drive, claiming that it simplifies repairs and renewals and gives a wider choice both of engine and compressor. The belted type requires larger buildings, because of the necessary distance between pulley centers, which the writer found to vary between 22 feet for vertical engines to 34 feet for horizontal types. In some plants two buildings are used, one containing the engines and the other the compressors, with belt galleries connecting the two. This is done as a precaution against fire and explosions.

#### **TYPES OF MACHINES USED AS EXPANSION UNITS.**

All expansion engines used in compression plants are machines originally designed to use steam that have been slightly modified to overcome the effects of the low temperatures from the use of compressed gas in the steam or power cylinders. Among the machines found in use are direct driven reciprocating pumps, drilling engines, and simple and cross compound compressors. Of these the reciprocating pump is the least to be recommended. The valves tend to freeze and stick, owing to the general design and slow action, and its efficiency as a power unit and its capacity are low.

Of the machines used as expansion engines the converted steam engine of the single or double stage (simple or compound) type is more often found than any other make. On these engines, remodeled for the expansion of high-pressure gas, the valve mechanism has been designed especially and made stronger for this particular service. The exceedingly low temperatures developed in the cylinders tend to freeze the valves, causing excessive strains on the valve stems and rods, and also make lubrication difficult.



DIRECT-CONNECTED COMPRESSOR AND GAS ENGINES.

Glycerin has universally been found to be the best lubricant for expansion cylinders and was in general use until the recent rise in price, and the difficulty of obtaining a reliable supply forced plant operators to try other oils, some of which have been found usable but not as satisfactory as glycerin. As the supply of that lubricant increases it will indoubtably again be generally used.

Other types of steam compressors and, in several plants, drilling engines belted to plunger or centrifugal pumps, are in use as expansion units, and, according to the operators using them, are giving satisfaction in regard to both capacity and temperatures. The loads of the drilling engines were varied to meet the conditions of pressure and volume of gas by throttling the flow of water from the pump, thus giving the required resistance for the development of power at normal engine speeds. The valve mechanism of the drilling engines was rebuilt and strengthened to meet these conditions.

At one plant where a drilling engine gave much trouble from freezing the piston rings were removed and the piston dressed to a square edge. The piston in this condition shaved the ice from the cylinder walls, thus preventing sticking or freezing. No lubricant was used in the cylinder, the film of ice or frost on its walls acting as a lubricant, and leakage past the piston after the film had formed was very small.

At plant 3 an engine of this type that has a 9 by 12 inch cylinder, making 90 revolutions per minute with one-fourth cut-off, takes gas at 130 pounds, gas at 250 pounds being throttled to that pressure, and exhausts it at 10 pounds. The engine is belted to a three-plunger pump throttled to a back pressure of 160 pounds in order to increase the load on the engine. The water pumped is used in the cooling towers and in the engine and the compressor jackets.

At plant 16 the expansion engine, accumulator tanks, and storage tanks are all housed in a double-wall insulated building. The advantage claimed is that the condensate is held at a low temperature in the storage and other tanks, thus preventing loss by evaporation through heating before blending. The condensate precipitated in the coils is kept from sudden and extreme rises in temperature, as would be the case if the storage tanks were not cooled or shaded. The temperature in the building and of the condensate in storage is thus held between 34° and 50° F.

Expanding the compressed, treated gas in engines to develop power for driving compressors or pumps is not an economy, because of the small amount of actual power delivered, the care necessary, and the cost of upkeep and lubrication, such engines being used only because the cooling effect the expanded gas has in the treatment of high-pressure gas in double-pipe coils or heat interchangers.

In simple expansion engines such as pumps, drilling engines, or single-expansion compressors the compressed gas before entering the

power cylinder is often reduced by a throttle valve from the maximum pressure used in the plant to pressures varying between 120 and 160 pounds, depending upon the design and size of the machine and the pressures for which it was built and under which it gives the best results.

Cross-compound machines usually take the gas at the maximum plant pressure and reduce the pressure in the first expansion to 30 to 60 pounds (see Table 5) and in the second stage to between 5 and 15 pounds. Generally the gas goes from the first-stage expansion cylinder to a drip or small accumulator tank, then directly to the low-stage cylinder. In plant 6 (see Table 4, p. 41), the gas from the first-stage expansion is led through a set of double-pipe coils and heated before being put through the second stage of expansion. By this system both the power developed in the expansion engine and the cooling efficiency of the expanded gas are increased, also the danger of freezing in the expansion cylinders is less.

#### COMPRESSORS.

Direct-connected compressor units are usually of the single-cylinder engine, single-stage type, although some plants in the eastern and Mid-Continent fields are using direct-connected, twin 2-stage machines. Of the direct-connected compressors the single-stage unit, found more often than any other make, as shown in Tables 8 and 9, has the engine and compressor cylinders opposed, or on the opposite sides of the fly wheels.

The sizes and types of compressors used in the various plants visited by the writer are shown in Table 8 (p. 74), which conveys an idea of the great variety of compressors and drives used in such plants.

#### AUXILIARY MACHINES.

In all natural-gas gasoline plants small engines are needed to circulate water in jackets, towers, and ponds, to produce electricity for light and pump air to start gas engines. The number, situation, and type and size of these units are generally matters of preference with each plant operator and no standard has been followed.

#### WATER-CIRCULATING PUMPS.

Many of the newest plants have centrifugal pumps belted to a pulley on the engine, which circulate the water used in both engine and compressor cylinder jackets; other plants use a line shaft with pulleys belted to the engines and to the centrifugal pumps. In many fields the water is heavily charged with mineral salts, and the water used in the cylinder jackets is often distilled or condensed and kept separate from that used in cooling the gas coils. This is often done by cooling the condensed water in a separate tower or by passing it through coils

in the main gas-cooling tower that are cooled with spray in the same way that the gas coils are cooled. In the latter method the condensed water is pumped from the coils in the tower through the jackets and back to the coils in a closed circuit. Where a separate tower is used the condensed warm water is sprayed in the tower, collected in the basin beneath the tower, and circulated by pumps through the jackets, and returned to the top of the tower to repeat the cooling and aeration. In this method the loss of condensed water in the tower is so great that it is not to be recommended unless the condensed water is easily made or obtainable from a boiler plant. The cooling effect gained is better, and the installation less expensive, if the cost of condensed water is not an object.

For circulating the water used to cool the gas, usually centrifugal or plunger pumps driven by small (5 to 10 horsepower) gas engines, or belted to a line shaft, are installed.

#### AIR PUMPS.

Air pumps for compressing air in receivers to start the main gas engines are generally single-cylinder pumps or compressors belted to gas engines, previously mentioned, or, in some plants, to a line shaft driven by a small gas engine. The receivers are built to stand pressures up to 250 pounds. When the desired pressure is built up in the receiver, the air pump is shut down until the pressure is relieved by use in starting the main gas engines, or by leakage, when the pump is again operated until the required pressure is obtained.

#### LIGHTING EQUIPMENT.

The necessity of using strong, reliable inclosed lights around compression machinery and the danger of open flames in plants treating natural gas at high pressures has forced operators to install small electric generators as part of the equipment of gasoline plants.

The electric plant is always housed in a building separate from the compressors, and usually in the building with the air and water pumps. The unit consists of a gas engine belted to a dynamo of a size and capacity suitable to the lighting needs of the plant, and is operated only at night. In large gas-pumping stations storage batteries are used both for light and for engine ignition, in place of direct connections.

#### GASOLINE PUMPS.

Plants situated some distance from the shipping point or blending station often require pumps to force the gasoline through the pipe lines to such stations.

The product is often blown from one tank to another by turning high-pressure gas into the tank containing the product, but where the

distance is great this method is not always satisfactory, and pumps of either rotary or reciprocating type are installed, usually being operated by belt connections to small gas engines. It is claimed for the rotary pumps that condensate losses are smaller than from the use of other types, because the agitation is less and the flow more steady and quiet through the pump and into the lines.

### BLENDING AND SHIPPING THE CONDENSATE.

Although blending of compression-plant condensates is not done primarily for the purpose of making a product that will meet the specifications required by transportation laws governing the shipment of gasoline by rail or water, blending and shipping have become such important functions, one of the other, that a separate discussion of the blending process and the transportation of the blended stock is not desirable.

#### REASONS FOR BLENDING.

When the condensate produced by compression is allowed to weather unblended until its vapor tension is reduced to less than 10 pounds at 100° F. and its temperature rises to atmospheric, losses ranging up to 75 per cent of the total product often result, whereas if the condensate is mixed (blended) with heavier straight still-run refinery distillates the losses from weathering are reduced, usually to one-half that amount, and often more. This fact has led condensate producers to take advantage of blending to increase the volume of the product actually marketed, thus increasing their profits and also the supply of marketable motor fuels so desirable under present conditions. The development in gasoline motors up to the present time has not reached a stage that would make the heavier still distillates, such as are used for blending, a convenient or economical fuel if used as made, because of the difficulty in starting the motor with such fuel and its tendency to deposit carbon in the cylinders and on the pistons from incomplete combustion, causing "engine trouble."

Condensate produced by compression is also an undesirable fuel for gasoline engines. It is exceedingly volatile, which causes losses in handling, is dangerous because fumes are easily formed, and gives less power as compared with equal volumes of heavier distillates, a larger number of gallons being required to develop the same power. It gives a quick, sharp explosion in a motor cylinder, but seems to lack "push" after the explosion has taken place. In the above qualities it is in no way different from still-run products of similar gravity and similar end points, both products needing additions of less volatile, heavier, and more powerful fractions in order to form the most convenient and economical motor fuel.

The lighter fractions of petroleum distillates, as compared with the heavier products, have a lower calorific value per gallon but a

higher calorific value per pound. As all products of petroleum are sold in the United States by volume or liquid measure, the standards for comparison must be made on the heat units per volume and not per weight.

As previously stated, another important factor in blending is transportation. The Interstate Commerce Commission rules controlling shipments of petroleum products and liquefied natural gas allow transportation of petroleum distillates having vapor tensions of less than 10 pounds per square inch in standard tank cars, and products with vapor tensions of 15 pounds per square inch in specially built insulated tanks. As many plants produce condensate that has a vapor tension of 30 or more pounds as it comes from the accumulator tanks, blending and weathering are both resorted to by most manufacturers in order to bring the product within shipping rules, to increase the quantity, and to improve the quality of the product.

#### **MARKETING UNBLENDED CONDENSATE.**

A small quantity of natural-gas gasoline finds its way to consumers unblended. It is sold as "gas-machine gasoline," a product with a gravity of 80° to 86° B., used to make gas for certain domestic, commercial, and chemical purposes, and as "export gasoline," a product with a gravity of 74° to 80° B. and of 4 to 6 pounds vapor tension, which is usually sold in containers to foreign trade.

The great bulk of condensate, however, is blended in one way or another before it reaches the consumer, but not always completely blended at the plant where it is made, or by the producer.

In many eastern fields the condensate is held in storage under pressure until a given quantity is ready for shipment, when it is forced by gas pressure or pumps through small (2-inch) pipe lines to the tanks of firms making a specialty of blending and marketing motor fuels, and having blending stations centrally situated among the compression plants from which they receive condensate. Products having a gravity as high as 84° B. are shipped in this way to blending companies.

#### **SHIPPING BY AUTO TRUCK.**

Another method of shipment, used mostly in California and northern Pennsylvania, is by tanks mounted on auto truck. Two plants shipping condensate of 80° to 83° B. gravity in this way are situated 30 miles from the blending stations of the buying companies. These are unusual examples, but a number of plants ship their product 6 to 10 miles in tanks of this character. Generally the tank is kept under a pressure of 10 to 20 pounds in order to reduce losses of the light condensates from agitation and heating during transportation.

## TRANSPORTING CONDENSATE IN CRUDE OIL.

Certain large producing and refining companies in California which buy or produce casing-head gasoline gage the product in the storage tanks at the compression plants for settlement, and have the condensate pumped directly into their crude oil storage or pipe lines leading to their refineries. They not only recover the gasoline when the crude oil is refined, but take advantage of the fact that the condensate "cuts" the crude, making it flow through the lines more easily. The extremely light fractions that are thus injected into the crude oil, and will not condense in the usual refinery condenser boxes, can be and are in many refineries compressed and cooled as in compression plants. This product is immediately blended at the refinery and thus held and sold.

As previously mentioned, a company in the Mid-Continent field produces only such condensates as can be shipped in tank cars. This is done by regulating the pressures and the temperatures used in the compression plant, so that only such condensate as can be shipped unblended will be precipitated.

A plant in California and some plants in other fields reduce the unblended condensate to conform with the shipping rules by weathering, because of the cost of shipping in blending naphtha. The condensate is exposed in storage tanks to atmospheric temperature and pressure until the vapor tension is reduced to the desired point, and then shipped in insulated cars. At times warming with steam is resorted to if the atmospheric conditions do not bring about the proper results. The use of steam is not to be recommended, however, except when absolutely necessary, because of the loss of some of the heavier fractions with the lighter ones.

## METHODS OF BLENDING.

Blending condensate with the various distillates used for that purpose, as practiced at present, is done at times in stages, and at many different points in the precipitation, storage, or transportation of the product.

The product of plants that ship their condensate without being blended usually goes to refineries or blending stations belonging to purchasers of this type of product, who blend the condensate before sending it to the retail markets. One blending company in West Virginia buys condensate, pumps it to the plant in pipe lines, stores it in closed tanks until needed, then blends it with naphtha in the following manner:

A tank car of naphtha is one-half unloaded, usually into an empty tank car, and then condensate is slowly pumped in through a valve in the bottom until the tank is filled. The condensate rises through

the naphtha and slightly agitates it, and in this way becomes absorbed and blended with the naphtha. At times the operation is reversed, a tank car being half filled with condensate and the naphtha pumped in from above. No further treatment is used, the car being shipped as soon as filled. The agitation during shipment tends to complete blending if such is necessary.

Blending practice at some refineries and casing-head gasoline plants is practically the same as described above except that stationary tanks are used in place of tanks on cars. At other blending plants a pump is used in blending, its suction being connected with two tanks, one of blending stock and the other of condensate. The flow of each is regulated in the pipe line by valves, the discharge of the pump going to a storage tank. From time to time the mixture in the storage tank is tested for gravity, if the blend is too light or too heavy the flow of either naphtha or condensate is adjusted to give the desired mixture.

At some plants methods of blending are more complicated. The procedure used by one company receiving its condensate by auto truck is as follows: A given quantity of California distillate with a gravity of  $53^{\circ}$  to  $55^{\circ}$  B. is placed in a cone-bottom blending tank, where it is washed with acid solution, caustic solution, and water; after this treatment condensate with a gravity of  $72^{\circ}$  to  $82^{\circ}$  B. is forced into the tank from the bottom. Air is then blown through the mixture to agitate it and remove the lightest fractions of condensate and dissolved gases. The mixture is tested for specific gravity, after which enough still-run California gasoline with a gravity of  $58^{\circ}$  B. is added to bring the whole to a gravity of  $60^{\circ}$  B. The blended gasoline produced by the above method and ingredients is sweet, water white, and has the following characteristics: 5.9 per cent distills over up to  $140^{\circ}$  F., the distillate having a gravity of  $79.9^{\circ}$  B.; 70 per cent distills over up to  $246^{\circ}$  F.; and 30 per cent distills over between  $246^{\circ}$  and  $344^{\circ}$  F.

Distilling this blended product in 5 per cent cuts shows it to be an exceptionally good motor fuel with none of the usual fractions missing.

While holding condensate in storage some blending companies and refineries, as well as compression-plant operators, keep the tanks containing such stock under pressure and often the tanks are insulated or housed and shaded in order to reduce evaporation by the sun and the atmosphere, one company having gone to the expense of building a louver tower over the tanks and keeping small sprays of water constantly covering them. The tanks, which are held under pressures of 10 to 20 pounds, are set in a concrete or wooden basin. The water collects in this basin, thence it is again circulated over the tanks by pumps. No outside cooling of the water is resorted to, the

evaporation from falling through the tower and over the tanks being sufficient to keep the water at a temperature considerably below that of the atmosphere, also any volatilization of the condensate itself tends to cool the liquid.

Where blending is done by refining or blending companies, as has been described, the operation is complete and the blended product is ready for market. The blended gasoline made in the Eastern fields has a gravity of between 65° and 70° B., and that made in California between 58° and 63° B. The difference in gravity is due to differences in the character of the crude oils from which the condensate and the blending stocks were made; this variation is discussed in later paragraphs. The blending is usually done so as to bring the product to a given gravity by the mixture of the two ingredients, whereas the final end point is determined by, and is the same, as the end point of the naphtha used. Although the proportions vary under these conditions, the proportions to be mixed to make a product of a given gravity can be approximately calculated from the gravity and the end points of the two liquids.

The methods of disposal of condensate mentioned are found mostly in California and some eastern districts; with few exceptions the practice in the Mid-Continent field is to blend either at the compression plant or at the loading station operated in conjunction with the plant.

#### BLENDING BY PLANT OPERATORS.

When the blending is done by the operator of the compression plant, one of the following methods is generally adopted: (1) Blending all of the condensate at the blending station or loading racks; (2) blending to a given stage at the plant, and transferring the partly blended product to the loading racks and either finishing the blending there or shipping it to some point at which naphtha is cheaper or more readily obtained; and (3) completing the entire operation at the plant.

#### BLENDING AT THE LOADING RACKS.

Many of the companies controlling two or more compression plants, situated in the same field and tributary to the same shipping point on a railroad, have adopted the method of blending the products from all their plants at a central station. A centrally situated loading station with racks and tanks (see Plate XII, A, p. 52), is necessary in any event for storing and loading the plant products and unloading and storing the blending stocks, so that the stations can be also fitted for blending practically without additional cost of labor and small increases in tankage.

In stations used in this way, the usual equipment consists of tanks of any desired capacity for the storage of naphtha, other tanks for

the storage of condensate, and tanks for the blended stock and from which the marketable product is transferred to tank cars for shipment.

The plant condensate is pumped or forced by its own pressure through small pipe lines into the condensate storage tanks, and the naphtha from tank cars is pumped into the naphtha tanks. From the naphtha storage tank a given quantity of naphtha is first pumped into the blending tank, then condensate is forced into the blending tank at the bottom, being allowed to rise through and be thoroughly absorbed by the heavier naphtha. When the predetermined quantity of each stock has been mixed in the blending tank, samples are tested for gravity, and if any change in gravity is desired more of the heavy or light stock is added, as the tests indicate to be necessary. The blended gasoline is next tested for vapor tension, and, if it is found to be too high for shipment in the cars used (standard or insulated tanks), the tank is allowed to stand open to the atmosphere for several hours, or even days, if necessary. In some plants it has been found necessary to heat the blended products to 80° to 90° F. with steam, in order to reduce the vapor tension to the required point in a limited time, so that the blending could continue without the installation of an excessive amount of tankage. Heating with steam should not be resorted to if avoidable, as a quick rise in temperature drives the lighter condensates off rapidly, carrying with them portions of the heavier and less volatile fractions. When the specific gravity and the vapor tension have been brought to a point within the regulations governing shipments of gasoline, the contents of the blending tank are either drawn off into cars for immediate shipment or pumped into a storage tank.

The blending method used at the majority of such stations usually consists merely of mixing calculated quantities of the different stocks to be disposed of and reducing the vapor tension of the mixture by open contact with the air or by slight warming with steam coils, placed in the blending tank.

The advantages of blending at loading and storage stations are that the productions of a number of plants can be handled, close connection with railroad service, and the low cost of handling both the naphtha and the blended stock. At times the tank cars are used as blending tanks, as described in a previous paragraph.

#### PARTIAL BLENDING AT PLANT.

Some operators, because of the plant being in a place where it is difficult or costs too much to bring in large quantities of naphtha, or, more often, because the company controls a refinery and desires to refine the gasoline by further treatment, such as distilling, have adopted the practice of blending only so far as is necessary for shipment at the compression plant or blending station, the final blending

and treatment being given at the refineries or points where the desired quantities and qualities of distillates may more readily be obtained. Some operators blend partly at the plants and finish the operation at the blending station or loading racks as described above, thus saving the costs of handling, of pipe line, and of the pumping capacity necessary to transfer all of the heavy blending stock to the plant and back to the loading station.

When the blending is completed at the blending station, it is done in the way described, except that smaller proportions of heavy naphtha are added, because some heavy naphtha has been previously added to the condensate at the plant.

#### PLANT BLENDING METHODS.

Plants at which blending is entirely or partly completed have developed methods and practices quite different from the usual way of mixing the two constituents in a blending tank. Many plants still blend the condensate and the naphtha in storage or blending tanks, using the methods previously described above, but a tendency has developed for blending at much earlier stages of the process.

#### BLENDING IN "MAKE TANKS."

The first step in this development was when certain operators pumped blending naphtha into the tanks known as "make tanks" (see Pl. IV, *C*, p. 26, and XII, *C*, p. 52), which receive the condensate from the accumulator tanks, and in which the total make of one day or shift was measured before being transferred to storage. The method as now used is to pump naphtha into the tank at such a rate that the percentage in the mixture would be somewhat below that desired in the final blend, or to place a given quantity of naphtha in the make tank and discharge condensate from the accumulators into the naphtha. In transferring condensate from the accumulator tank to the make tank, the sudden release of pressure causes violent weathering or boiling, owing to the high vapor tension. By adding heavier blending stocks at this point the vapor tension is lowered, with consequent lessening of losses from the light condensate and dissolved gas weathering rapidly and carrying off with them part of the heavier fractions.

The product of this blend is gaged in the make tank, the quantity of naphtha deducted, and the actual plant production calculated. At the end of each day or shift the mixture is transferred to storage tanks and the blend completed or shipped to another point for blending as described above.

#### BLENDING IN ACCUMULATOR TANKS.

Blending in accumulator tanks, as found in practice by the writer, consists of pumping naphtha slowly and continually into the tanks, connected with the high-pressure coils, at a pressure a few pounds in

excess of that at which the gas is being treated. The naphtha is injected into the tank through small ( $\frac{1}{4}$ -inch) pipes at a point near the top and through fittings which cause a spray, the theory being that the spray will collect fine particles of condensate in falling through the gas and reduce the gravity and the vapor tension of the product before it is released from the high pressure at which it is precipitated and thus reduce losses of condensate.

Operators using this method claim it produces a marked increase in plant production, one in particular claiming a net increase of 10 per cent. The mixture is drained from the accumulator tank as in other practice, either automatically or by hand, as the custom of the plant may be, the quantities being figured as previously described to determine the plant production.

#### HOT BLENDING.

When naphtha is injected into the high-pressure gas while it is in the coils, or before it has reached the coils, and is still hot from compression, the method is called "hot blending."

This method has been adopted at some plants where the gas treated contains large proportions of the exceedingly light fractions and the condensate had shown extreme losses in storage and during weathering and blending by other methods. A Pennsylvania operator producing condensate with a gravity of 92° to 95° B. claims a net gain of 15 per cent in marketed condensate from the use of this method, and one in Oklahoma, approximately 30 per cent.

Hot blending has been tried out at two California plants, in different fields, to the writer's knowledge and no advantage gained. The plants produce condensate with a gravity of 82° to 86° B., using pressures between 200 and 250 pounds.

One eastern plant, which compressed the gas to 300 pounds pressure, injects naphtha through a needle valve placed in the high-pressure water-cooled coil header at the intake (hot) end of the coil. The naphtha is pumped through the valve at a pressure of 400 pounds per square inch, which causes it to spray or atomize in the header and intimately mix with the hot gas as the gas divides into the coil pipes leading out of the header. The first few (10 to 15) feet of this coil is kept dry to permit the hot gas to vaporize as much of the naphtha as possible before the gas and the naphtha are cooled by the water sprayed over the rest of the coil.

What happens to the injected naphtha is not definitely known, but it appears that the naphtha is divided into three parts. One part is volatilized by the heat of the high-pressure gas (190° F. on the day of the writer's visit), carried with the gas into the water-cooled coils, and again condensed, thence it is carried to the accumulator tank with other condensate. A second part of the atomized naphtha is probably carried mechanically into the upper pipes of

the coil by the flow of gas, where it settles out, owing to the slower rate of flow, and carries with it other condensable vapors. The third part, which is neither vaporized nor carried mechanically into the upper members of the coil, goes to the bottom of the header and flows with the gas through the bottom pipe and blends with the condensate and naphtha in the discharge header, while still under maximum pressure. The mixture then flows to the accumulator tank and thence is trapped into storage tanks.

The quantity of naphtha injected into the header is calculated to be somewhat less than is needed to bring the mixture to the gravity desired, the balance being added, in this plant, to the partly blended stock in the make tank, which is also held under pressure. Another feature of the practice at this plant is that the pressure on the blended stock is reduced slowly to avoid violent boiling or weathering. This is accomplished by holding a pressure of 50 or 60 pounds on the make tank while the output of the plant is being transferred to it during a day or shift. At the end of that period another tank is put into service and the pressure on the tank containing the day's "make" is slowly relieved, while the stock gradually acquires approximately the temperature of the atmosphere. At this point the blend is transferred to storage tanks or placed in tank cars for shipment. For each 100 gallons of condensate produced 77 gallons of naphtha is pumped into the coils, which lowers the gravity of the condensate from 90° to 96° B. to between 70° and 76° B.; later, in the "make" tank, enough eastern naphtha, with a gravity of 58° to 60° B., or California distillate, with a gravity of 48° B., is added to form a blend of the desired quality.

At another plant a practice similar to the one just described was adopted, except that the naphtha was injected into the hot-gas line at a point just beyond the oil separator and 40 or 50 feet ahead of the coils, the naphtha thus traveling with the gas through the coils and on to the accumulator tanks. This plant, although making 9 gallons of condensate per thousand feet of gas treated, as measured in the accumulator tanks, had by the old method of blending been able to market only 2.5 gallons. By the adoption of hot blending it was able to market 3.7 gallons from each thousand feet of gas treated. The loss, however, is still extremely high, and it is probable that an entire readjustment of pressures and temperatures throughout the plant would show better returns and smaller losses.

#### POSSIBLE IMPROVEMENTS IN BLENDING METHODS.

No set of rules can be given or standard methods of blending described that would even approximately cover all conditions, but there are methods and practices that if adopted by individual plants would have marked advantages and show a decided saving of condensate.

The problems of each plant must necessarily be taken up separately and a study made of the properties and characteristics of the condensate formed, such as the gravity, the vapor tension, and the proportions of the different "cuts" and the hydrocarbons they contain. That these vary widely is shown by the different pressures and temperatures necessary to precipitate the condensates, also by the vapor tensions or wildness of different plant products. The point at which blending is done should be given attention, to find whether the best results are obtained by blending in storage tanks, in make tanks, in accumulator tanks, or in coils, also the effects of release of pressure and rise in temperature should be studied to find whether sudden lowering of pressure and rise in temperature does not cause undue losses. Blended products are at many plants placed in storage tanks which are not protected from the sun and a quick rise in temperature is to be expected. The color an exposed tank is painted, has a direct bearing on the amount of heat absorbed from the sun's rays and taken up by the contents. Releasing the pressure on the condensate slowly, or holding it under a low pressure and storing it in insulated tanks has, at a number of plants, been found to decrease losses.

Refining companies have found that storing the lighter distillates in tanks with the water-sealed top, painted glossy white, show reduced losses well worth the expense of construction and operation of this system of storage.

#### **LOSSES OF CONDENSATE IN WEATHERING AND SHIPPING.**

Plant operators, in reporting losses of condensate, often use as a basis the total amount of condensate collected and measured in the accumulator tanks before blending, and while still under pressure, which is obviously the wrong place to make such an estimate, because such measurement is taken during treatment and not at the final stage of production. The condensate in the accumulator tank, because of the temperature and pressure, contains some dissolved gas and fractions of the hydrocarbon group which it is impossible to hold under normal atmospheric conditions, and which should not be counted as loss when computing the plant production.

The writer, in order to form an accurate idea of the losses at different plants, and as far as possible to use the same basis in estimating these losses, has obtained from the plants listed the quantity of condensate actually stored in tanks, either blended or unblended as the practice indicated. With this quantity as a basis estimates of the losses in further operations, such as weathering, pumping to loading stations, loading in cars and shipping, are computed.

In Table 2 (p. 29), the column headed "Daily production, gallons," represents the number of gallons that were actually marketed by the different plants listed, as nearly as these figures could be arrived at, and is net production after all losses are deducted.

## CALIFORNIA PRACTICE.

California plants, in general, trap or blow the product of the accumulator tanks directly into storage tanks without blending and measure the make in the storage tanks. As these tanks are seldom held under pressures greater than 5 to 15 pounds, weathering goes on continually and causes an unknown loss, only the weathered product being measured.

At plants where the raw condensate is pumped from the storage tanks into the crude oil storage tanks of purchasing companies, under this method of calculating losses the results show no loss except that due to weathering while the condensate is being held in plant storage, the product being sold on the gage readings taken in the storage tank at the compression plant.

Companies shipping raw condensate in automobile trucks distances of 2 to 40 miles report losses in loading, transportation, and unloading of 2 to 7 per cent. Those delivering their product through pipe lines 1 to 40 miles long report losses of 1 to 6 per cent, depending on the length of the lines, the amount of leakage from them, and the pressure necessary to force the liquid through.

## EASTERN PRACTICE.

Many plants in the eastern fields ship raw condensate by pipe line and trucks, as in California practice, with losses the same or slightly greater in amount than those quoted, owing to the raw products having higher gravities and vapor tensions. One large oil company has recently laid pipe lines to a number of the fields in northern and western Pennsylvania for the purpose of collecting the raw condensate produced in those fields and which was formerly hauled to market in trucks. Well-constructed pipe lines will undoubtedly minimize losses from handling condensate produced in this district.

## OKLAHOMA PRACTICE.

Casing-head gasoline producers in Oklahoma estimate the total loss as varying between 10 and 40 per cent. The losses during weathering of the blended product run from 10 to 20 per cent, depending on the gravity of the raw product and the vapor tension of the blend. Often heating with steam is necessary, before loading the condensate into tank cars, to bring the vapor tension within the limits required by the railroad shipping rules, especially in cold weather, when weathering will not bring the blended stock to the desired condition.

The loss in this field due to transferring the product from the plant storage tanks to loading or blending stations varies from 2 to 7 per cent, and in loading from a rack to cars, between 1 and 5 per cent.

The loss during shipment in standard tank cars is variously given as being between 2 and 10 per cent, with an average of approximately 6 per cent, the loss depending much on the distance and length of time used in haulage, the atmospheric temperatures encountered, and the condition of the tank used for shipment.

The so-called thermos cars, an insulated tank car, have given very satisfactory returns on their cost to certain producers using them, who report a maximum outage (loss in transit) of  $2\frac{1}{2}$  per cent when used for long shipments in hot weather, and report instances of no outage on short hauls in moderate, rainy, or cold weather. The railroad rules governing shipments in insulated cars are more in favor of the shipper in regard to vapor pressures, allowing 15 pounds as the maximum in place of 10 pounds as in standard cars.

The losses in blending and shipping in the Mid-Continent field may be generalized as follows:

	Per cent.
Weathering.....	5 to 20
Transferring to loading station.....	2 to 7
Loading in car tanks.....	1 to 5
Shipping in standard cars.....	2 to 10
Total losses.....	10 to 42

Plants treating gas that contains large proportions of the lighter fractions and using pressures and temperatures that will precipitate these fractions produce the "wildest" condensate and in consequence suffer the greatest losses. As the converse of this practice a single-stage plant (No. 76 in the tables) in the Mid-Continent field, mentioned in several places throughout this paper, produces a condensate having a gravity of  $79^{\circ}$  B. and a vapor tension of about 5 pounds that is shipped in standard tank cars with a total loss of 2 to 3 per cent, including the losses from being transferred several miles through pipe lines to the loading racks and from loading into the cars.

#### NAPHTHA USED AS BLENDING STOCK.

To form an ideal motor fuel, the distillate or naphtha used in blending should be one that will give the mixture a uniform series of fractions between the temperatures at which distillation begins and finishes, with none of the fractions with boiling points so high as to cause incomplete combustion and carbon deposits in motor cylinders.

To blend and weather condensate to correspond with the above conditions is possible, but such practice, because of the great waste and expense, is followed only in blending special gasolines for engine or speed tests. Also, in making straight refinery distilled gasoline, because of the increased demand for motor fuel, more and more of the heavier distillates have been cut into the motor-fuel fractions, causing a lower gravity and a higher end point.

Rittman, Dean, and Jacobs <sup>a</sup> have shown clearly the differences in still-run and blended gasolines (see fig. 13) as they are put upon the market. They state that the blended casing-head products have larger percentages distilling below 50° C. but have longer distillation ranges, which tend to make the slope of the temperature-percentage curves for these gasolines flatter than those of straight refinery products. They also state that any gasoline having an unusually large distillation cut below 50° C. and with considerable percentages distilling within the temperature ranges of 150° to 175° C. and 175° to 200° C., and being deficient in constituents boiling at intermediate

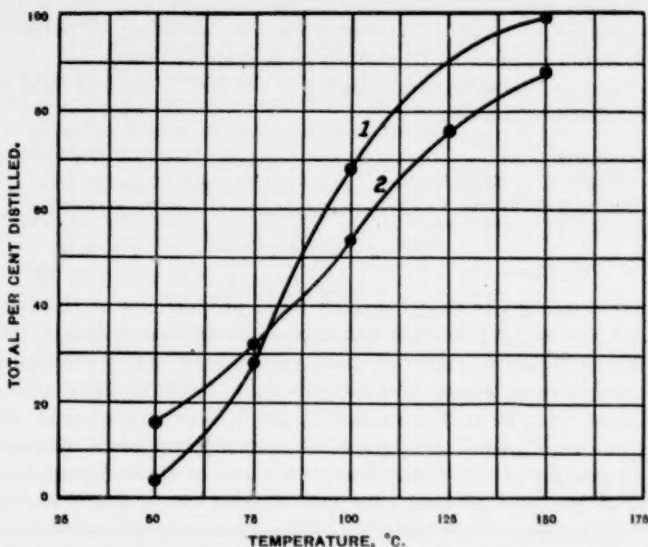


FIGURE 13.—Curves showing volatility ranges of refinery and of casing-head gasoline. 1, refinery gasoline; 2, casing-head gasoline. The flatter slope of the curve for casing-head gasoline shows that the content of both low and high boiling constituents is greater in the blended gasoline. After Rittman.

points of the distillation, may be classed as one of these blended products.

The naphthas or distillates being used for blending are those fractions that distill from crude oil after the cuts marketed as "straight still-run" gasoline have distilled off. The naphthas made from eastern and Mid-Continent crudes range in gravity from 46° to 60° B., whereas those made from the asphaltic base California crude oils range between 42° and 52° B. The difference in the eastern and western distillates is due to the fact that the crude oils in the different fields differ in character, having paraffin, asphaltic, or mixed bases.

<sup>a</sup> Rittman, W. F., Dean, E. W., and Jacobs, W. A., Physical and chemical properties of gasolines sold throughout the United States during the calendar year 1915: Tech. Paper 163, Bureau of Mines, 1916, p. 27.

The eastern and the California naphthas used in blending have approximately the same end points, although the gravities differ  $7^{\circ}$  to  $10^{\circ}$  B.; also the blends formed have different gravities, although the end points, power developed per gallon, and the completeness of combustion of the mixtures are practically similar. The differences in the specific gravities of the various cuts of similar end points from the different crudes decreases as the cuts become lighter.

Mid-Continent crudes having mixed bases vary between California and Pennsylvania crude, and have gravity and end point ratios between the two extremes stated above.

Certain companies in buying blended gasoline specify that the product shall have a gravity of not less than  $67^{\circ}$  B. and an upper end point not more than  $400^{\circ}$  F., which will require that naphtha with a gravity of about  $55^{\circ}$  B., if from Mid-Continent crude, or  $48^{\circ}$  B., if from California, be used in making the mixture.

Numerous blending plants, however, use distillates with as low gravity and as high end point as the kerosene fractions, and, as far as is known, find no trouble in marketing such blends. In using naphthas for blending it has been found that the heavier naphthas give better results than the lighter ones in lowering the vapor tension of the mixture, for equal quantities put in, the heavy fractions having a tendency to "hold down" the light fractions.

#### PROPORTIONS IN BLENDS.

In general it may be stated that blended gasoline usually consists of a mixture of half casing-head gasoline and half naphtha or distillate, but the proportions vary, depending upon the gravity and vapor tension of both constituents, blending being carried to a point, in conjunction with weathering, that brings the product within the shipping rules and shows maximum profits to the producers.

#### STRATIFICATION OF BLENDED GASOLINE.

In many quarters belief has been expressed that in blended gasoline the light condensate fractions separate from the heavier distillate fractions, causing stratification. The writer could find no direct evidence that such stratification takes place, and interviewed many operators and blenders who had made various tests and were unable to find such a condition. It is true that owing to change of temperature, in a closed tank, the lighter fractions at times vaporize and condense on the sides of the container and drain down, floating in a thin layer on top of the liquid. This condition may have given rise to the belief regarding stratification, but, as shown, is not due to separation of the two or more blended constituents through differences in their gravities. All fractions of petroleum oils are gen-

orally considered as soluble, one in the other, and a blend of two or more fractions such as naphtha and condensate should not separate or stratify. All evidence obtainable indicates that no such stratification actually takes place in blended motor fuels through the difference in specific gravity of the members blended. A test made on a California blended product and reported to the writer showed no separation. The blend, which was a small quantity of condensate with a gravity of 105° B. and a large quantity of distillate with a gravity of 48° B., was placed in a 10-barrel tank and tested after standing one week without being disturbed. Samples drawn from the top and bottom had specific gravities differing only 0.07° B. This blend found a ready market as fuel for motor trucks.

The naphthas used and the blends marketed at the present time depend to no small extent on the market conditions of the heavier distillates. Naphthas that can be obtained in quantity easily and regularly, thus insuring a steady supply, are often chosen in preference to a more perfect blending stock, supplies of which can not be depended upon.

#### **COSTS OF COMPRESSION PLANTS.**

The widely varying conditions under which compression plants are being installed, both as to situation and the machinery and the steel markets, make estimates of the costs of plants so uncertain that the subject will be undertaken with the idea of showing the costs of plants recently installed, of which the writer has knowledge, rather than to attempt to estimate costs in general for present or future installations.

An operator in the Mid-Continent field who has built and is running three plants computes plant construction costs on a unit basis and gives the costs of one unit that will treat 400,000 to 500,000 cubic feet of gas daily, as follows: One single-stage unit, compressing the gas to a pressure of 75 or 90 pounds, \$8,000 to \$9,000; one two-stage unit compressing to 200 or 250 pounds, \$15,000 to \$18,000. Vacuum pumps at the compression plants are included in this estimate, but not gathering lines with their pumps, or the expansion engines that are used at the plants. On this basis, a 1,000,000-foot plant compressing gas to a pressure of 250 pounds would cost approximately \$36,000, or \$36 per 1,000 feet of capacity.

The expense of construction and equipment of a plant compressing 1,250,000 cubic feet of gas daily to 250 pounds, put into commission in June, 1916, was stated to be \$36,570, divided as follows:

*Cost of compression plant with a capacity of 1,250,000 cubic feet.*

Machines, engines, compressors, water pumps, and air pumps and tanks.....	\$18,240
Pipe and fittings, engine and compressor connections, cooling coils and double-pipe coils.....	1,534
Building compressor room with steel frame, cooling tower, accumulator tank and storage housing, auxiliary engines and pumps.....	6,756
Gathering lines.....	3,797
Tankage.....	1,105
Gas traps.....	700
Electric plant.....	395
Labor, carpenter work; pipe-fitting; concrete, etc.; setting engines.....	4,043
Total.....	36,570

No expansion set is included in this estimate, but when the capacity of the plant was doubled later in the same year a simple single-stage compressor was installed as an expansion engine and is used to expand all of the gas treated, or 2,500,000 cubic feet. The construction of the first half of the plant shows a cost of \$29 per 1,000 feet capacity. The entire cost of the plant after the original capacity was doubled and an expansion engine installed is approximately \$60,000, or \$24 per 1,000 feet capacity.

Another plant with a total capacity of 2,500,000 feet, built during the same period, using the same pressures and very similar to the plant described above, in units and "hook-up" (compressor and engine drive), but using a drilling engine as an expander, cost \$55,000, or \$22 per thousand feet capacity.

The cost per 1,000 feet of capacity of plants treating small quantities of gas, 100,000 to 250,000 cubic feet daily, is relatively higher; instances having come to the attention of the writer of costs of \$40 or \$50 per 1,000 feet capacity for plants of that size.

One small plant—a 250,000-foot plant compressing gas to 250 pounds—including an expansion engine, cost \$11,000, or more than \$44 per 1,000 feet of capacity.

Plants treating small quantities of gas under pressures obtained by single-stage compressors and having simple cooling systems, such as are found in many eastern fields, notably Sistersville, W. Va., cost much less than is indicated by the above estimates.

No estimate of costs of gathering systems, with vacuum stations and booster compressors, can be made, as the conditions vary from a few hundred feet of 6-inch lines to lines of 8 and 10 inches diameter extending 5 to 10 miles from the plant and having as many as 30 pumps and "booster" machines forcing the gas through the mains and maintaining low pressures on the wells.

## Report sheet used at compression plant in California.

DAILY REPORT. On tour..... Date.....  
 Gasoline Plant C, No. 1. First engineer..... Third engineer.....  
 Gas from wells No. .... Second engineer..... Fireman.....

## MACHINE REPORT.

		Number of machine.										OIL USED—GALLONS.									
		1		2		3		4		5						6		7		8	
SHUT DOWNS.		Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.	Hours.	Min-utes.
For shift.....																					
For month forwarded.....																					
Total for month.....																					
Machine No. ....		1	2	3	4	5	6	7	8	9	10										
Time of reading.....		3																			
		6																			
		9																			
		12																			
		For shift.....										Steam cylinder.		Journal.		Compression and gas cylinder.		Glycerin.			
		For month forwarded.....																			
		Total for month.....																			
		Total for year.....																			

GAS TEMPERATURES—DISCHARGE FROM LOW AND HIGH PRESSURE CYLINDERS.

Machine No.....	1		2		3		4		5		6		7		8		9		10	
	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.	Inter-mediate.	High.
Time of reading.....	3	6	0	6	12															

EXPANSION SET—TEMPERATURES AND PRESSURES.

TEMPERATURES AND PRESSURES.				EXPANSION SET—TEMPERATURES AND PRESSURES.			
At-mos-pheric tem-perature.	Cool-ing wa-ter.	Scrubber.		High-pressure Inlet.	Intermediate expansion.		Bess. coil No. 1.
		Pres-sure.	Tem-perature.		Pres-sure.	Tem-perature.	
Time of reading.....	3	6	9	12			

PRODUCTION REPORT.

GAL- LONS.		GRAV- ITY.		GAL- LONS.		GRAV- ITY.	
Low pressure							
High pressure							
Coil 1.....							
Coils 2 and 3.....							
Exhaust.....							
For shift.....							
For month forward.....							
For year forward.....							
For year total.....							
Boilers cleaned.....							
Boilers repaired.....							
Furnace repaired.....							
Water used.....							

REMARKS:

Certified correct by .....First Engineer.  
Sheet No.....

## THE ADVANCEMENT OF THE INDUSTRY.

Since the first commercial gas compression plants were established, about 15 years ago, in the eastern oil fields, marked advancement has been made in the mechanical and commercial phases of the natural-gas gasoline industry.

Up to about five or six years ago, most of the plants consisted of the simplest forms of gas pumps, single-stage compressors, and cooling coils, were operated only on rich casing-head gas that would produce 4 to 6 gallons of condensate, and had a capacity of not more than 200,000 or 300,000 cubic feet daily.

At present plants are in operation treating 6,000,000 to 9,000,000 cubic feet daily of gas yielding as low as 1 gallon of condensate per 1,000 cubic feet, using pressures of 250 and 300 pounds per square inch in two stages of compression, with elaborate systems of cooling the gas with water before compression and after each stage of compression. The water used is cooled below normal temperatures by induced aeration and radiation.

In some plants the gas is further cooled by expanding the dry treated gas through the cylinders of an expansion engine and using the cold expanded gas to cool the high-pressure gas from the water-cooled coils. Temperatures as low as 0° F. are often obtained, causing the precipitation of nearly all the condensable fractions commercially valuable for making gasoline.

## FORMULAS AND TABLES GOVERNING THE FLOW OF GAS IN PIPE LINES.

Formulas governing the flow of gas in pipes have been worked out by Weymouth and discussed by him in a paper<sup>a</sup> published by the American Society of Mechanical Engineers. These formulas with that part of Weymouth's report that relates to the flow of gas in pipe lines are given in the following:

### TRANSMISSION OF NATURAL GAS.

By THOMAS R. WEYMOUTH.

In the design of pipe lines for the transmission of natural gas from the field to the points of consumption it is necessary to make use of a formula expressing the relations to each other of the quantity and initial and final pressures of the gas, and the diameter and length of line. Many such formulas have been proposed giving widely differing results. In nearly all of them the flow is stated as varying as the square root of the fifth power of the pipe diameter, and either the coefficient of friction is considered constant, or a different coefficient is given for each diameter of pipe. This serves well enough where the diameter is known and any one of the other quantities expressed by the formula is desired, but is somewhat awkward when it is desired to ascertain the diameter of line necessary to meet the other given conditions.

The author has derived a new formula which he believes expresses the relationship of the quantities involved even more closely than any heretofore offered. It is based on isothermal flow, and the variation in the value of the coefficient of friction is provided for without complicating the formula, yet permitting the required diameter of line to be ascertained readily.

The expression for the initial velocity of any gas flowing in a pipe is given by Unwin<sup>b</sup> as

$$(1) \quad u_1 = \sqrt{\frac{gC T m (P_1^2 - P_2^2)}{f l P_1^2}}$$

$u_1$ =initial velocity, in feet per second.

$g$ =acceleration due to gravity.

$C$ =thermodynamic constant of the flowing gas  $= \frac{PV}{T}$

$T$ =absolute temperature of gas.

$m$ =hydraulic mean radius of the pipe  $= \frac{D}{4}$ .

$P_1$ =absolute initial pressure of the gas, in pounds per square inch.

$P_2$ =absolute final pressure of the gas, in pounds per square inch.

$f$ =coefficient of friction.

$l$ =length of line, in feet.

<sup>a</sup> Weymouth, T. R., Problems in natural-gas engineering: Trans. Am. Soc. Mech. Eng., vol. 34, 1912, pp. 185-234.

<sup>b</sup> Unwin, W. C., Transmission and distribution of power from central stations, 1892, p. 259.

Let

$C_a$  = thermodynamic constant for air.

$G$  = specific gravity of flowing gas, air = 1.0.

$D$  = diameter of pipe, in feet.

$d$  = diameter of pipe, in inches.

$$\text{Then } C = \frac{C_a}{G}, \text{ and } m = \frac{D}{4} = \frac{d}{48}$$

Hence

$$(2) \quad u_1 = \left[ \frac{g C_a T (P_1^2 - P_2^2) d}{48 G f P_1^2} \right]^{\frac{1}{2}}$$

If  $q$  = quantity of gas flowing per second, based on absolute pressure and temperature of  $P_o$  and  $T_o$ ,

$$A = \text{area of cross section of pipe in square feet} = \frac{\pi d^2}{4 \times 144}$$

Then

$$(3) \quad q = u_1 A \frac{P_1 T_o}{P_o T} = u_1 \left( \frac{\pi d^2}{4 \times 144} \right) \frac{T_o P_1}{P_o T} \left( \frac{\pi}{576} \right) \frac{T_o}{P_o} \left[ \frac{g C_a (P_1^2 - P_2^2) d^5}{48 G T f l} \right]^{\frac{1}{2}}$$

If

$Q$  = flow in cubic feet per hour, based on  $P_o$  and  $T_o$ , and

$L$  = length of line, in miles,

Then

$$l = 5280 L$$

and

$$Q = 3,600 q$$

$$(4) \quad Q = \frac{3,600 \pi}{576 \sqrt{48} \times 5280} \frac{T_o}{P_o} \sqrt{g C_a \left[ \frac{(P_1^2 - P_2^2) d^5}{G T f L} \right]^{\frac{1}{2}}}$$

Taking  $g = 32.17$  and  $C_a = 53.33$ ,

$$(5) \quad Q = 1.6156 \frac{T_o}{P_o} \left[ \frac{(P_1^2 - P_2^2) d^5}{G T f L} \right]^{\frac{1}{2}}$$

Experiments on the flow of air in pipes of different diameters indicate that the coefficient of friction  $f$  is a variable, decreasing with increasing diameters of line. A great many such experiments have been collected and published in "Compressed Air," by Elmo G. Harris, from which, by the use of equation 5, the coefficients of friction have been computed and plotted in figure 14.

In the reports of these tests no statements were made as to the method of measuring the quantity of gas flowing, and it is quite probable that many of the results are inaccurate in this respect. Notwithstanding this, however, the nature of the variation of  $f$  with the diameter is evident, and the curve represented by the equation

$$f = \frac{0.008}{\sqrt[3]{d}}$$

gives a fair average of the loci of the points plotted. Inserting this value of  $f$  in equation 5, the expression becomes

$$(6) \quad Q = 18.062 \frac{T_o}{P_o} \left[ \frac{(P_1^2 - P_2^2) d^{5\frac{2}{3}}}{G T L} \right]^{\frac{1}{2}}$$

Equation 6 is the general formula for the flow of gas in long pipe lines.

In 1901 Forrest M. Towl conducted an extended test on an 8-inch line, 70 miles long, supplying gas to Buffalo, the results of which were published in a bulletin issued by Columbia University in 1911. Previous to the test the line had been repaired and tested for leaks, and was known to be practically gas-tight. The flow was measured by standardized Pitot tubes, which gave results accurate within less than 1 per cent. The specific gravity  $G$  of the flowing gas was 0.64, its temperature

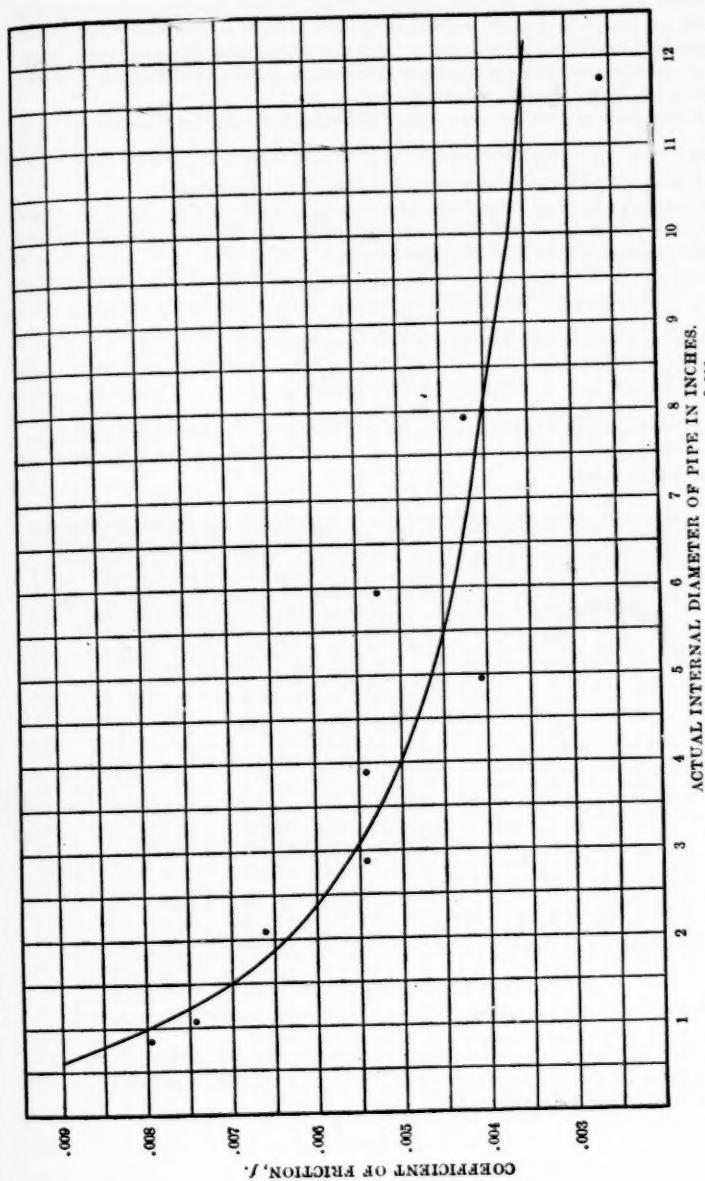


FIGURE 14.—Curve for coefficient of friction for flow of gas in pipes. Coefficient of friction  $f$  equals  $\frac{0.008}{d^{1.75}}$ , where  $d$  is internal diameter of pipe in inches.

32° F., or  $T=492^\circ$  absolute. The temperature basis on which the gas was measured was 50° F., or  $T_0=510^\circ$  absolute, and the pressure basis was 4 ounces above 14.4 pounds, or  $P_0=14.65$  pounds per square inch absolute. In a length of pipe 70.32 miles long  $P_1$  and  $P_2$  were 210 and 41 pounds per square inch absolute, respectively. The actual diameter of the pipe was 7.981 inches, and the rate of flow by Pitot tube was found to be 221,000 cubic feet per hour.

Inserting these quantities in formula 1 and solving for flow, it becomes

$$Q=221,400 \text{ cubic feet per hour,}$$

or less than 0.2 per cent greater than the actual flow as measured.

Assuming gas standard conditions of measurement basis, namely, 60° F. and 14.65 pounds absolute pressure, and that the average flowing temperature of the gas throughout the year will be 40° F., the formula becomes

$$(7) \quad Q=28.66 \left[ \frac{(P_1^2 - P_2^2) d^{5/4}}{LG} \right]^{1/4}$$

and, if an average specific gravity of 0.60 be assumed,

$$(8) \quad Q=37 \left[ \frac{(P_1^2 - P_2^2) d^{5/4}}{L} \right]^{1/4}$$

Formula 8 is of practical use in designing lines for the transmission of natural gas. It is used as given, or in a transposed form, for all problems relating to single lines of uniform diameter.

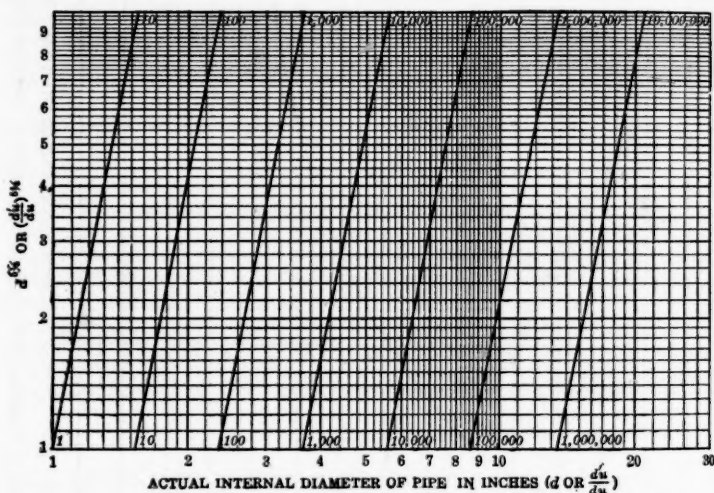


FIGURE 15.—Broken curve showing values of equivalent lengths of different diameters of pipe.

If a line is composed of several lengths,  $L_1, L_2, \dots, L_n$ , of diameters  $d_1, d_2, \dots, d_n$ , each of these lengths must be transformed into an equivalent length of one chosen diameter, by means of the formula

$$(9) \quad L_n^1 = L_n \left[ \frac{d_n^1}{d_n} \right]^{5/4}$$

These equivalent lengths added together will give  $L=L_1, L_2, \dots, L_n$ , which is the value for  $L$  in formula 8.

Values of equivalent lengths for different diameters can be most conveniently ascertained by the use of the curves in figure 15, which consist of plots of the values of  $d^5$  for varying values of  $d$ . Values taken from these curves are convenient to use directly in the pipe-line formula, equation 8, whereas they are most simply used in equation 9 as values of the  $5\frac{1}{2}$  power of the diameter ratios.

TABLES.

VOLUME OF FLOW FROM DIFFERENT SIZES OF PIPE AT VARIOUS PRESSURES.

The number of cubic feet of gas of a specific gravity of 0.6 (air equaling 1.0) that will flow from the mouth of a 1-inch pipe in 24 hours is given in Table 10 following. The pressure of the container is taken as 4 ounces above an assumed atmospheric pressure of 14.4 pounds to the square inch, and the temperature of the flowing gas and the container is assumed to be 60° F. If the diameter of the pipe is other than 1 inch, multiply the discharge value given in Table 10 by the square of the actual diameter of the pipe, as found in Table 11.

TABLE 10.—Rate of flow of natural gas in pipe 1 inch in inside diameter at various pressures.<sup>a</sup>

Observed gage pressure.			Flow, cubic feet per day.	Observed gage pressure.			Flow, cubic feet per day.
Inches of mercury.	Inches of water.	Pounds per square inch.		Inches of mercury.	Inches of water.	Pounds per square inch.	
-----	0.1	0.0036	12,390	10.17	-----	5.0	436,200
-----	0.2	0.0073	17,560	11.18	-----	5.5	456,200
-----	0.3	0.0109	21,480	12.20	-----	6.0	473,750
-----	0.5	0.0182	27,726	13.21	-----	6.5	489,840
0.05	0.7	0.0254	32,820	14.23	-----	7.0	505,920
0.7	1.0	0.0374	39,210	15.25	-----	7.5	522,010
0.11	1.5	0.0545	48,030	16.26	-----	8.0	538,500
0.15	2.0	0.0727	55,340	18.30	-----	9.0	565,970
0.22	3.0	0.109	67,910	20.33	-----	10.0	589,270
0.29	4.0	0.145	78,910	24.39	-----	12.0	633,340
0.37	5.0	0.182	87,670	28.46	-----	14.0	675,000
0.52	7.0	0.254	103,500	32.53	-----	16.0	713,550
0.74	10.0	0.3636	123,000	36.60	-----	18.0	748,650
1.02	13.75	0.50	146,220	40.66	-----	20.0	779,350
1.52	20.62	0.75	175,350	50.81	-----	25.0	845,150
2.03	27.5	1.00	201,800	61.00	-----	30.0	902,180
3.05	41.25	1.5	247,840	71.16	-----	35.0	954,820
4.07	55.0	2.0	285,130	-----	-----	40.0	999,680
5.08	68.75	2.5	316,500	-----	-----	45.0	1,039,700
6.10	82.50	3.0	344,350	-----	-----	50.0	1,072,000
7.12	96.25	3.5	370,000	-----	-----	55.0	1,106,880
8.13	110.0	4.0	393,000	-----	-----	60.0	1,137,600
8.15	-----	4.5	415,270	-----	-----	-----	-----

<sup>a</sup> Thompson, A. B., Oil-field development and petroleum mining, Lind., 1916, pp. 578-579; quoted by Johnson, R. H., and Huntley, L. G., Oil and gas production, 1916, p. 9.

In correcting for temperature of flowing gas, where observed, of 30°, 40°, 50°, and 60° F., add 4, 3, 2, and 1 per cent, respectively. To change the result, as found by this table, to that for any other specific

gravity of gas than 0.6, multiply by  $\sqrt{\frac{0.6}{\text{specific gravity of gas}}}$

TABLE 11.—Multipliers for pipe of diameters other than 1 inch.<sup>a</sup>

Diam-eter of opening.	Multi-plier.	Diam-eter of opening.	Multi-plier.	Diam-eter of opening.	Multi-plier.	Diam-eter of opening.	Multi-plier.	Diam-eter of opening.	Multi-plier.
<i>Inch.</i>		<i>Inches.</i>		<i>Inches.</i>		<i>Inches.</i>		<i>Inches.</i>	
1	0.0038	1	1.00	4	16.00	6	36.00	8	64.00
1 1/4	0.0156	1 1/4	2.25	4 1/4	18.00	6 1/4	39.00	8 1/4	68.00
1 1/2	0.0625	2	4.00	5	25.00	6 1/2	43.90	9	81.00
1 3/4	0.2500	2 1/4	6.25	5 1/4	26.90	7	49.00	10	100.00
2	0.5625	3	9.00	5 1/2	31.60	7 1/4	52.50	12	144.00

<sup>a</sup> Johnson, R. H., and Huntley, L. G., Oil and gas production, 1916, p. 355.TABLE 12.—Variation in volume of 100 cubic feet (100 per cent) of gas at constant temperature under various gage pressures.<sup>b</sup>

Pressure per square inch.	Volume.	Pressure per square inch.	Volume.	Pressure per square inch.	Volume.
<i>Ounces.</i>	<i>Per cent.</i>	<i>Pounds.</i>	<i>Per cent.</i>	<i>Pounds.</i>	<i>Per cent.</i>
0.....	100.0	4.....	78.6	20.....	42.3
2.....	99.1	5.....	74.6	30.....	32.8
4.....	98.3	6.....	71.0	40.....	23.8
6.....	97.5	7.....	67.7	50.....	22.7
8.....	96.7	8.....	64.7	75.....	16.8
10.....	95.9	9.....	62.0	100.....	12.8
12.....	95.1	10.....	59.5	150.....	8.9
14.....	94.3	12.....	55.0	200.....	6.8
<i>Pounds.</i>					
1.....	93.6	14.....	51.5	250.....	5.5
2.....	88.0	16.....	47.8	300.....	4.6
3.....	83.0	18.....	44.9	400.....	3.3

<sup>b</sup> Johnson, R. H., and Huntley, L. G., Principles of oil and gas production, 1916, p. 355.

## CHANGE IN VOLUME OF GAS WITH CHANGE IN TEMPERATURE.

In Table 13 following, the standard is taken at 60° F. and 14.4 inches of mercury plus 0.25=14.65 inches of mercury. Absolute zero=460° F. below freezing=488° below 60° F. The specific gravity of the natural gas is taken at 0.6, air being 1. The same 1,000 cubic feet of gas at 60° F. will measure 1,041 cubic feet at 80° and 959 cubic feet at 40°. The percentage of the decrease and increase below or above 60° F.; the specific gravity of the gas at temperatures below and above 60° F.; also weight of 1,000 cubic feet of gas and air at the different temperatures is shown. For each degree there is a change of 0.002056 in volume.

TABLE 13.—*Change in volume of 1,000 feet of air or natural gas, owing to change in temperature.<sup>a</sup>*

Tempera- ture.	Volume of 1,000 cubic feet of gas measured at tem- peratures other than 60° F.	Loss or gain in volume.	Specific gravity (specific gravity= 0.6 at 60° F.).	Weight of 1,000 cubic feet of gas (0.6 specific gravity at 60° F.).	Weight of 1,000 cubic feet of air.
° F.	Cubic feet.	Per cent.		Pounds.	Pounds.
0	877	-12.3	0.6841	58.82	85.97
10	897	-10.3	0.6689	56.41	84.33
20	918	-8.2	0.6536	54.04	82.69
32	943	-5.7	0.6362	51.36	80.73
40	959	-4.1	0.6256	49.68	79.43
50	980	-2.0	0.6124	47.63	77.77
60	1,000	0.0	0.6000	45.67	76.12
70	1,020	+2.0	0.5879	43.78	74.48
80	1,041	+4.1	0.5763	41.95	72.83
90	1,061	+6.1	0.5652	40.23	71.10
100	1,082	+8.2	0.5545	38.56	69.55
110	1,102	+10.2	0.5442	36.95	67.90
120	1,122	+12.3	0.5343	35.40	66.26
130	1,143	+14.3	0.5247	34.10	64.62
140	1,163	+16.3	0.5157	32.47	62.98
150	1,184	+18.4	0.5067	31.07	61.33
160	1,204	+20.4	0.4981	29.72	59.69
170	1,225	+22.5	0.4898	28.42	58.05
180	1,245	+24.5	0.4818	27.17	56.40
190	1,265	+26.6	0.4739	25.94	54.76
200	1,285	+28.6	0.4665	24.78	53.12
210	1,306	+30.7	0.4591	23.63	51.48
212	1,311	+31.1	0.4576	23.41	51.16

<sup>a</sup> Westcott, H. P., *Handbook of natural gas*, Erie, Pa., 1913, p. 379.

SPECIFIC GRAVITY AND BAUMÉ SCALE COMPARED.

Table 14 shows Baumé hydrometer readings from 10° to 90° B. with corresponding specific gravity, and also the corresponding weight of gasoline in pounds per United States gallon at 60° F.

TABLE 14.—*Baumé scale and specific gravity equivalents.*<sup>a</sup>

° B.	Specific gravity.	Pounds in gallon.	° B.	Specific gravity.	Pounds in gallon.	° B.	Specific gravity.	Pounds in gallon.
10	1.000	8.33	37	0.8383	6.99	64	0.7216	6.01
11	0.9929	8.27	38	0.8333	6.94	65	0.7179	5.98
12	0.9859	8.21	39	0.8284	6.90	66	0.7143	5.96
13	0.9790	8.15	40	0.8235	6.86	67	0.7107	5.92
14	0.9722	8.10	41	0.8187	6.82	68	0.7071	5.89
15	0.9655	8.04	42	0.8140	6.78	69	0.7035	5.86
16	0.9589	7.99	43	0.8092	6.74	70	0.7000	5.83
17	0.9524	7.93	44	0.8046	6.70	71	0.6965	5.80
18	0.9459	7.88	45	0.8000	6.66	72	0.6931	5.77
19	0.9396	7.83	46	0.7955	6.62	73	0.6897	5.74
20	0.9333	7.77	47	0.7910	6.59	74	0.6863	5.71
21	0.9272	7.72	48	0.7865	6.55	75	0.6829	5.69
22	0.9211	7.67	49	0.7821	6.51	76	0.6796	5.66
23	0.9150	7.62	50	0.7778	6.48	77	0.6763	5.63
24	0.9091	7.57	51	0.7735	6.44	78	0.6731	5.60
25	0.9032	7.52	52	0.7692	6.40	79	0.6699	5.58
26	0.8974	7.47	53	0.7650	6.37	80	0.6677	5.55
27	0.8917	7.42	54	0.7609	6.33	81	0.6635	5.52
28	0.8861	7.38	55	0.7568	6.30	82	0.6604	5.50
29	0.8805	7.33	56	0.7527	6.27	83	0.6573	5.47
30	0.8750	7.29	57	0.7487	6.23	84	0.6542	5.45
31	0.8696	7.24	58	0.7447	6.20	85	0.6512	5.42
32	0.8642	7.20	59	0.7407	6.17	86	0.6482	5.40
33	0.8589	7.15	60	0.7368	6.13	87	0.6452	5.37
34	0.8537	7.11	61	0.7330	6.10	88	0.6422	5.35
35	0.8485	7.07	62	0.7292	6.07	89	0.6393	5.32
36	0.8434	7.02	63	0.7254	6.04	90	0.6364	5.30

<sup>a</sup> U. S. Bureau of Standards, United States standard tables for petroleum oils, Circular 57, 1916, p. 57.

NOTE.—Degrees Baumé may be converted to specific gravity by adding 130 to the number of degrees Baumé and dividing the sum by 140.

#### CAPACITIES OF ORIFICES.

Table 15 shows the capacities of orifices, for testing small flows of natural gas, ranging from one-eighth of an inch to 1½ inches in diameter in plates one-eighth of an inch thick.

TABLE 15.—Capacities of orifices for testing flows of natural gas from small gas wells and casing-head gas from oil wells.<sup>a</sup>  
[Temperature, 60° F.; atmospheric pressure, 14.4 pounds per square inch.]

THREE-EIGHTHS-INCH ORIFICE IN PLATE ONE-EIGHTH INCH THICK.

Pressure.	Capacity, in cubic feet per 24 hours, at specific gravity of—											
	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1	1.05	1.10	1.15
Inches of water.												
0.5.....	2,270	2,180	2,100	2,030	1,970	1,910	1,850	1,810	1,760	1,720	1,680	1,640
1.0.....	3,460	3,330	3,200	3,090	2,990	2,910	2,830	2,750	2,680	2,620	2,550	2,500
1.5.....	4,310	4,140	3,990	3,860	3,730	3,620	3,520	3,420	3,330	3,260	3,180	3,110
2.0.....	4,890	4,690	4,470	4,320	4,180	4,060	3,940	3,840	3,740	3,650	3,560	3,480
2.5.....	5,400	5,190	4,960	4,800	4,640	4,500	4,370	4,260	4,160	4,060	3,960	3,880
3.0.....	5,870	5,650	5,420	5,250	5,090	4,940	4,790	4,680	4,570	4,460	4,350	4,260
3.5.....	6,290	6,060	5,830	5,650	5,490	5,340	5,190	5,080	4,970	4,860	4,750	4,650
4.0.....	6,650	6,410	6,170	5,990	5,830	5,680	5,530	5,420	5,310	5,200	5,090	4,980
4.5.....	7,010	6,760	6,520	6,340	6,180	6,030	5,880	5,770	5,660	5,550	5,440	5,330
5.0.....	7,380	7,120	6,880	6,700	6,540	6,390	6,240	6,130	6,020	5,910	5,800	5,690
5.5.....	7,750	7,490	7,250	7,070	6,910	6,760	6,610	6,500	6,390	6,280	6,170	6,060
6.0.....	8,120	7,860	7,620	7,440	7,280	7,130	6,980	6,870	6,760	6,650	6,540	6,430

ONE-HALF-INCH ORIFICE IN PLATE ONE-EIGHTH INCH THICK.

0.5.....	4,490	4,320	4,160	4,020	3,890	3,770	3,670	3,570	3,480	3,400	3,330	3,260
1.0.....	6,360	6,010	5,790	5,600	5,440	5,260	5,110	4,970	4,850	4,730	4,620	4,520
1.5.....	7,940	7,590	7,310	7,070	6,840	6,640	6,450	6,280	6,130	5,970	5,830	5,700
2.0.....	9,140	8,790	8,490	8,140	7,810	7,600	7,400	7,200	7,020	6,850	6,700	6,550
2.5.....	10,220	9,820	9,470	9,140	8,830	8,590	8,350	8,120	7,920	7,730	7,550	7,380
3.0.....	11,150	10,720	10,350	10,000	9,660	9,370	9,110	8,860	8,640	8,430	8,240	8,060
3.5.....	12,020	11,550	11,130	10,750	10,410	10,100	9,810	9,550	9,310	9,080	8,860	8,650
4.0.....	12,850	12,290	11,850	11,440	11,060	10,730	10,430	10,170	9,940	9,700	9,460	9,230
4.5.....	13,640	13,050	12,590	12,160	11,770	11,420	11,100	10,810	10,550	10,300	10,050	9,810
5.0.....	14,390	13,770	13,300	12,900	12,530	12,190	11,890	11,620	11,350	11,080	10,810	10,550
5.5.....	15,110	14,470	14,000	13,590	13,200	12,840	12,510	12,210	11,920	11,630	11,340	11,060
6.0.....	15,810	15,160	14,680	14,260	13,860	13,490	13,150	12,840	12,530	12,220	11,920	11,630

<sup>a</sup> Wescott, H. P., Handbook of casing-head gas, 1916, pp. 56-62.

TABLE 15.—Capacities of orifices for testing flows of natural gas from small gas wells and casing-head gas from oil wells—Continued.

THREE-FOURTHS-INCH ORIFICE IN PLATE ONE-EIGHTH INCH THICK.

Pressure.	Capacity, in cubic feet per 24 hours, at specific gravity of—													
	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1	1.05	1.10	1.15	1.20	1.30
<i>Inches of water.</i>														
0.5.....	10,560	10,150	9,780	9,450	9,150	8,880	8,630	8,400	8,180	7,960	7,800	7,630	7,470	7,170
1.0.....	14,530	13,960	13,450	13,000	12,580	12,210	11,860	11,550	11,260	10,980	10,730	10,500	10,280	9,870
1.5.....	17,720	17,030	16,410	15,850	15,350	14,890	14,470	14,080	13,730	13,400	13,090	12,800	12,530	12,040
2.0.....	20,390	19,590	18,870	18,230	17,650	17,130	16,650	16,200	15,790	15,410	15,060	14,730	14,420	13,850
2.5.....	22,740	21,850	21,030	20,340	19,700	19,110	18,570	18,070	17,620	17,190	16,800	16,430	16,080	15,450
3.0.....	24,880	23,900	23,030	22,250	21,550	20,900	20,310	19,770	19,270	18,810	18,390	17,970	17,580	16,900
3.5.....	26,990	25,930	24,980	24,140	23,370	22,670	22,030	21,450	20,900	20,400	19,930	19,490	19,080	18,330
4.0.....	28,970	27,830	26,820	25,910	25,090	24,340	23,650	23,020	22,440	21,900	21,400	20,920	20,480	19,680
4.5.....	30,800	29,560	28,510	27,550	26,670	25,870	25,150	24,470	23,860	23,290	22,750	22,250	21,770	20,920
5.0.....	32,500	31,230	30,090	29,070	28,150	27,210	26,540	25,830	25,180	24,570	24,000	23,500	23,020	22,080
5.5.....	34,080	32,740	31,530	30,480	29,510	28,630	27,830	27,080	26,400	25,760	25,170	24,620	24,100	23,150
6.0.....	35,630	34,230	32,990	31,870	30,860	29,940	29,090	28,320	27,600	26,930	26,310	25,740	25,200	24,200

1-INCH ORIFICE IN PLATE ONE-EIGHTH INCH THICK.

Pressure.	Capacity, in cubic feet per 24 hours, at specific gravity of—													
	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1	1.05	1.10	1.15	1.20	1.30
<i>Inches of water.</i>														
0.5.....	10,560	10,150	9,780	9,450	9,150	8,880	8,630	8,400	8,180	7,960	7,800	7,630	7,470	7,170
1.0.....	14,530	13,960	13,450	13,000	12,580	12,210	11,860	11,550	11,260	10,980	10,730	10,500	10,280	9,870
1.5.....	17,720	17,030	16,410	15,850	15,350	14,890	14,470	14,080	13,730	13,400	13,090	12,800	12,530	12,040
2.0.....	20,390	19,590	18,870	18,230	17,650	17,130	16,650	16,200	15,790	15,410	15,060	14,730	14,420	13,850
2.5.....	22,740	21,850	21,030	20,340	19,700	19,110	18,570	18,070	17,620	17,190	16,800	16,430	16,080	15,450
3.0.....	24,880	23,900	23,030	22,250	21,550	20,900	20,310	19,770	19,270	18,810	18,390	17,970	17,580	16,900
3.5.....	26,990	25,930	24,980	24,140	23,370	22,670	22,030	21,450	20,900	20,400	19,930	19,490	19,080	18,330
4.0.....	28,970	27,830	26,820	25,910	25,090	24,340	23,650	23,020	22,440	21,900	21,400	20,920	20,480	19,680
4.5.....	30,800	29,560	28,510	27,550	26,670	25,870	25,150	24,470	23,860	23,290	22,750	22,250	21,770	20,920
5.0.....	32,500	31,230	30,090	29,070	28,150	27,210	26,540	25,830	25,180	24,570	24,000	23,500	23,020	22,080
5.5.....	34,080	32,740	31,530	30,480	29,510	28,630	27,830	27,080	26,400	25,760	25,170	24,620	24,100	23,150
6.0.....	35,630	34,230	32,990	31,870	30,860	29,940	29,090	28,320	27,600	26,930	26,310	25,740	25,200	24,200

1-INCH ORIFICE IN PLATE ONE-EIGHTH INCH THICK.

Pressure.	Capacity, in cubic feet per 24 hours, at specific gravity of—													
	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1	1.05	1.10	1.15	1.20	1.30
<i>Inches of water.</i>														
0.5.....	10,560	10,150	9,780	9,450	9,150	8,880	8,630	8,400	8,180	7,960	7,800	7,630	7,470	7,170
1.0.....	14,530	13,960	13,450	13,000	12,580	12,210	11,860	11,550	11,260	10,980	10,730	10,500	10,280	9,870
1.5.....	17,720	17,030	16,410	15,850	15,350	14,890	14,470	14,080	13,730	13,400	13,090	12,800	12,530	12,040
2.0.....	20,390	19,590	18,870	18,230	17,650	17,130	16,650	16,200	15,790	15,410	15,060	14,730	14,420	13,850
2.5.....	22,740	21,850	21,030	20,340	19,700	19,110	18,570	18,070	17,620	17,190	16,800	16,430	16,080	15,450
3.0.....	24,880	23,900	23,030	22,250	21,550	20,900	20,310	19,770	19,270	18,810	18,390	17,970	17,580	16,900
3.5.....	26,990	25,930	24,980	24,140	23,370	22,670	22,030	21,450	20,900	20,400	19,930	19,490	19,080	18,330
4.0.....	28,970	27,830	26,820	25,910	25,090	24,340	23,650	23,020	22,440	21,900	21,400	20,920	20,480	19,680
4.5.....	30,800	29,560	28,510	27,550	26,670	25,870	25,150	24,470	23,860	23,290	22,750	22,250	21,770	20,920
5.0.....	32,500	31,230	30,090	29,070	28,150	27,210	26,540	25,830	25,180	24,570	24,000	23,500	23,020	22,080
5.5.....	34,080	32,740	31,530	30,480	29,510	28,630	27,830	27,080	26,400	25,760	25,170	24,620	24,100	23,150
6.0.....	35,630	34,230	32,990	31,870	30,860	29,940	29,090	28,320	27,600	26,930	26,310	25,740	25,200	24,200



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**Defendant's Exhibit 151.**

Technical Paper 214

Petroleum Technology 52

DEPARTMENT OF THE INTERIOR, Franklin K. Lane, Secretary.

BUREAU OF MINES, Van. H. Manning, Director.

**MOTOR GASOLINE — PROPERTIES, LABORATORY  
METHODS OF TESTING, AND PRAC-  
TICAL SPECIFICATIONS.**

By E. W. Dean.

(Department of the Interior seal) Washington Govern-  
ment Printing Office 1919

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First edition. February, 1919.

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# MOTOR GASOLINE; PROPERTIES, LABORATORY METHODS OF TESTING, AND PRACTICAL SPECIFICATIONS.

5

By E. W. Dean.

## FOREWORD.

This report is issued as a revised edition of Technical Paper 166, on the properties and testing of gasoline. Discussion that has lost its significance since the date of issue of Technical Paper 166 has been omitted, and much information has been added that has become of recent importance.

With conditions in the oil refining and marketing industries even more unsettled than they were at the time of issue of Technical Paper 166, anything approximating a last word on the subject treated is impossible. But because of the need of keeping the public in touch with this important and rapidly developing technical field the Bureau of Mines issues this report.

## INTRODUCTION.

One of the most desirable conditions to be attained in the development of technical or commercial undertakings is that producers and users shall be able to determine the relative desirability of commodities on the basis of simple and accurate tests. Up to a recent date such a condition has not been reached in regard to gasoline and it was believed that satisfactory specifications, based on laboratory tests, could not be written for commercial transactions in this commodity. Claims were frequently made that actual use constituted the only adequate test for the value of gasoline.

It is now definitely established that the most unreliable test in vogue for gasoline is that of the average user who "tries it out" in his car. Engine tests, if conducted in the laboratory in connection with power measurements, are still the last word in determining the utility of motor fuel, but the internal-combustion motor is so complex a mechanism that it can not be made to serve as an analytical instrument except when handled by experts. Properly interpreted results of an analysis in the chemical laboratory give more reliable information concerning the utility of a grade of gasoline than  
6 anything less than the most elaborately conducted engine-dynamometer tests, or the collective experience of a large number of users.

In the course of the past two or three years rational methods for analyzing and grading gasoline have come into vogue. Published descriptions are not, however, readily available and in addition many of the methods, though based on sound theoretical principles, have not been developed to an optimum of simplicity and reliability. The object of the present paper is to furnish information regarding the desirable properties of gasoline and the best methods of testing it. Suggestions are offered with regard to rational specifications and the interpretation to be placed upon the requirements that may be adopted.

#### ACKNOWLEDGMENT.

The bureau began its study of gasoline specifications at the suggestion of W. A. Williams, formerly chief petroleum technologist of the bureau. Much credit is due Mr. Williams and his successor, Chester Naramore, for assistance and advice in preparing this report.

To Van. H. Manning, director of the bureau, who has shown particular interest in the problem, credit is due for guidance in assembling a large part of the material presented.

W. A. Jacobs, H. H. Hill, and C. R. Bopp, of the petroleum division of the bureau, collected and analyzed samples of gasoline, thereby obtaining information of utmost importance in connection with the discussion and recommendations of this report.

Many of the tests and analytical methods described are based on the experimental work of chemists and petroleum technologists who have been kind enough to cooperate with the bureau in furnishing information. Acknowledgment of credit due these men is made in connection with descriptions of the tests.

#### NEED OF GASOLINE SPECIFICATIONS.

The bureau was originally asked to prepare specifications for Government purchases of several grades of gasoline and naphtha, and to guide State and local legislative bodies that proposed to formulate regulations for controlling the quality of gasoline. More lately the bureau has assisted in preparing specifications for the purchase of gasoline for military purposes, particularly for the Aviation Service.

#### GENERAL PROPERTIES OF SATISFACTORY GASOLINE.

The fundamental principle upon which gasoline tests and

specifications must be based is that quality is not inherent but is determined by the service required. For instance, gasoline that is entirely satisfactory in present-day cars or trucks might have been almost useless in the cars of several years ago and would not serve in airplane motors at all. Hence a discussion of the desirable properties of gasoline must be confined to general statements, and then if reduced to specifications must take into account the conditions of use. The essentially desirable properties of gasoline may be summarized briefly as follows:

1. The gasoline should not contain too large a percentage of highly volatile products, which tend to cause large evaporation losses and excessive danger in handling and storage, but should have enough volatile constituents to permit starting an engine under reasonably unfavorable conditions, without preheating.

2. The gasoline should not contain any considerable percentages of heavy or nonvolatile constituents, which after atomization into the engine cylinders can not be completely vaporized and burned.

3. The gasoline should not contain material that after combustion leaves a residue that collects in the motor.

4. The gasoline should be free from substances that attack metal, either before or after combustion. Unremoved acid (used in refining) falls under this head.

5. Neither the gasoline nor its products of combustion should have a strong or markedly disagreeable odor, as this is objectionable to users of automobiles.

6. The gasoline should be free from noncombustible material such as water and sediment.

These stated requirements are simple in principle and are almost axiomatic. The chief problem is to fix limits, defined by actual tests, that will satisfy the desirable conditions.

#### TYPES OF GASOLINE MARKETING AND THEIR GENERAL PROPERTIES.

There are at present on the market types of gasoline produced by several general methods. These may be classified as follows:

1. "Straight refinery" gasoline.
2. Blended "casing-head" gasoline.
3. "Cracked" and blended gasolines.

*"Straight" Refinery Gasoline.*

"Straight" refinery gasolines are produced by methods that vary somewhat in different parts of the country, but in general are similar. Crude oil is distilled in a fire still until the gravity of the condensed product reaches some predetermined mark. The distillate, so-called crude naphtha or benzine, is acid refined, neutralized, washed and steam distilled. Several products of different ranges of volatility may be produced from the crude naphtha, or the steam distillation  
8 may separate the gasoline from the less volatile "bottoms" that go into the kerosene or burning-oil stock.

Straight refinery gasolines are generally characterized by a low content of "unsaturated"<sup>a</sup> and aromatic hydrocarbons and by a distillation curve of characteristic form, free from marked irregularities. The distillation curve of a typical straight refinery motor gasoline appears later in this paper on Form 2 (see page 29), the sheet used by the bureau for keeping graphic records of distillation analyses of gasoline.

*Blended Casing-head Gasoline.*

During the past few years so-called casing-head gasoline, obtained from natural gas by compression or absorption processes, has come on the market. "Straight" casing-head gasoline, especially that produced by the compression process, is usually too volatile for general use and, before being marketed, is blended with enough heavy naphtha to produce a mixture that can be used safely as motor fuel. In general, blended casing-head gasoline is characterized by a volatility range that shows a considerable percentage of constituents of relatively low boiling point, and a high "end point." The characteristic curve of a blended casing-head gasoline appears on Form 2, to which reference has already been made. Frequently, however, the blending is done in a manner difficult to detect; the natural gas gasoline is used in moderately small proportion with "heavy" straight refinery naphtha in order to make a product with a desirable percentage of volatile constituents.

As regards chemical properties, blended casing-head gasoline seems to be identical with straight refinery products of the same distillation range, provided the comparison is limited to derivatives of the same or similar producing fields.

---

(a) The term unsaturated is generally understood to include olefins and poly-olefins. The general chemical formula for the olefin series of hydrocarbons is  $C_nH_{2n}$ . Aromatic hydrocarbons occurring in gasoline generally fall in the benzene series, having the general chemical formula  $C_nH_{2n-6}$ .

Characteristic physical properties of these gasolines are due wholly to the details of blending.

*Cracked or Synthetic Gasoline.*

"Cracked" or synthetic gasoline is an important factor in the present market supply of motor fuel and is being produced in large quantities. It is generally sold in the form of blends with varying proportions of straight refinery and casing-head gasoline.

Cracked gasolines are similar to straight refinery products in some physical and chemical properties, but differ in the matter of containing varying proportions of unsaturated hydrocarbons.<sup>a</sup> The utility of these constituents has not yet been completely determined. It appears that they have balanced advantages and disadvantages, and it is not as yet safe to predict the degree of satisfaction with which cracked products of relatively high "degree of unsaturation"<sup>b</sup> can be used in general service. Thus far, however, these products have been marketed in the form of blends that are perfectly satisfactory and are generally used without knowledge that they contain cracked gasoline.

PROPERTIES OF GASOLINE AND METHODS OF TESTING.

Before a system of analysis and specifications is outlined it seems desirable to discuss the individual properties that might be considered important and to describe analytical methods. This paper is not intended as a complete review of gasoline analysis, and those properties that are considered of minor practical importance are not discussed in detail.

*Color.*

Color is of some importance because it serves as an index of other qualities. Properly refined gasolines are "water white," and hence it is often desirable to include a color requirement in specifications for gasoline. It does not, however, seem necessary to employ a test involving any sort of a tintometer, as the rough-and-ready method of looking through the

(a) Aromatic hydrocarbons also occur in smaller degree in cracked gasoline, but for reasons involving economy in production the yield of these hydrocarbons is generally minimized.

(b) Highly unsaturated cracked gasoline shows a loss through treatment with an excess of cold concentrated sulphuric acid which in some cases runs as high as 40 per cent. The blends usually marketed are, however, less than 8 per cent "unsaturated."

bottom of a 4-ounce sample bottle<sup>a</sup> or 100 c. c. graduate is adequate.

#### *Odor.*

Gasoline should be free from a rank or disagreeable odor, as such odor causes discomfort to users, especially if it has a tendency to cling to clothing. Of course, one can not fix a definite standard of quality and strength for odor. The older requirements demanded the sweet, pleasant odor characteristic of "high-test" uncracked distillates. With the present necessity of using cracked gasoline this requirement has become impossible and the requirement of odor must be omitted or left rather indefinite.

#### 10 *Water, Sediment, and Other Foreign Matter.*

Gasoline should obviously be free from water and other foreign matter. Water is seldom present in gasoline and is always easy to detect, as the two liquids are mutually insoluble. Sediment is equally easy to detect on account of the transparency of gasoline.

#### *Acidity.*

Obviously gasoline should not contain any of the acid used during the refining process. Market products rarely fail to meet this requirement, which is so important that a test should always be made. A simple and effective method of detecting acidity is to shake the residue in the Engler flask, after an analytical distillation, with a little distilled water, and then to test this water extract with a suitable indicator, such as litmus, methyl orange, or phenolphthalein. Shaking the original sample with water does not serve to detect acid that is chemically combined with the gasoline, and this test, although recommended in Technical Paper 166, seems to be practically useless.

#### *Calorific or Heating Value.*

The value of motor fuel is a function of its heating value or B. t. u. value. The differences in heating value among varieties of gasoline are relatively small, and this property is, therefore, not important enough to merit determination in the routine testing of gasoline. Some recent experiments of

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(a) The oil industry commonly employs a cylindrical 4-ounce bottle of the following approximate outside dimensions: Height of body 5½ inches, diameter of body 1½ inches, height of neck ¾ inch, diameter of neck ¾ inch.

the Bureau of Mines<sup>a</sup> indicated that a straight refinery gasoline, with a gravity of 74° B., was about 1.3 per cent higher in heating value than a cracked gasoline, with a gravity of 58° B., on the basis of weight and about 7 per cent lower on the basis of volume. Seemingly the heavier and less volatile gasolines are actually superior to the high-test light products as regards potential power production per gallon. This assumption, of course, implies equal efficiency in utilization.

*Content of Aromatic Hydrocarbons--Benzene, Toluene, and Others.*

The desirability of aromatic hydrocarbons as motor fuel is a question that is already receiving attention. The commercial production of sufficient toluene to meet the needs of the explosives industry has yielded an excess of the benzene and solvent naphtha fractions of light oil and new methods of utilizing these products are being sought. The total available quantity of these aromatic hydrocarbons is small in relation to the country's production of gasoline, but it is important, especially in localities where coal is coked in by-product ovens.

The utility of aromatic hydrocarbons as motor fuel has already been studied to some extent. On the basis of present evidence, these products, although chemically different from petroleum hydrocarbons, appear to have properties that give certain advantages in utilization. This problem merits discussion beyond the scope of the present paper; however, the evidence at hand indicates that if aromatic hydrocarbons appear in the American market as motor fuel in the future, users will be benefited.

The percentage of aromatic hydrocarbons permissible in gasoline for use in the average automobile motor may be necessarily limited to some maximum that has been proven desirable by experience. The relatively high freezing point of pure benzene (5.5° C. or 42° F.) is one factor that may necessitate such a limitation, which can probably be effected most simply by a gravity requirement. Aromatic hydrocarbons—benzene, toluene, and the others—have specific gravities of about 0.87 to 0.88 (29° to 30° B.) and distill at the same temperatures as petroleum hydrocarbons having specific grav-

(a) Rittman, W. F., Jacobs, W. A., and Dean, E. W., Physical and chemical properties of gasolines sold throughout the United States during the calendar year 1915: Tech. Paper 163, Bureau of Mines, 1916, 45 pp. Refer to Table 7, p. 18.

ities between 0.70 and 0.76 (54° to 70° B.). Therefore, an approximate idea of the percentage of aromatics in a mixture can be obtained through the relation between figures for distillation range and specific gravity.

### *Unsaturated Hydrocarbons.*

Another matter that has not been worked out completely is the effect of unsaturated hydrocarbons on the properties of gasoline. As already stated, there is conclusive evidence showing that gasolines containing moderate percentages of unsaturated hydrocarbons can be used with entire satisfaction, but it has not yet been definitely established that the presence of unlimited proportions of these constituents causes no disadvantage.

In view of the present market conditions it does not seem desirable to emphasize any requirements that may interfere with the development of cracking processes, as this now seems to offer the greatest possibility of conserving the country's petroleum resources.

The bureau has recently published as Technical Paper 181<sup>a</sup> the results of a study of the comparative advantages of various analytical methods employed for determining "degree of unsaturation." This study has shown that the acid-heat test largely used by refiners is little better than qualitative and that determinations of iodine absorption by the Hanus method, though accurate and fairly rapid, requires a fair degree of manipulative skill on the part of the operator. The

measurement of the percentage absorbed by concentrated 12 sulphuric acid seems on the whole the most practical

method of ascertaining the degree of unsaturation of a gasoline, provided the details of this test are properly conducted. It must, however, be understood that this percentage value is not the actual olefin content of the gasoline.<sup>b</sup>

### *Specific Gravity.*

Specific gravity is in itself of very slight significance in determining the properties of gasoline, except as noted in the discussion of mixtures containing aromatic hydrocarbons. Gravity may serve as an index of other properties, particular-

(a) Dean, E. W., and Hill, H. H., Determination of unsaturated hydrocarbons in gasoline: Tech. Paper 181. Bureau of Mines, 1917, 25 pp.

(b) Brooks, B. T., and Humphrey, Irwin, The action of concentrated sulphuric acid on olefins, with particular reference to the refining of petroleum distillates: Jour. Am. Chem. Soc., vol. 40, May, 1918, pp. 822-856.

ly volatility, if knowledge is at hand regarding the source and method of production of a sample of gasoline.

Gasolines of equivalent volatility from the Pennsylvania and California fields may have gravities differing as much as 8° Baume'. Figures indicating this fact appear in Technical Paper 163<sup>a</sup> of the Bureau of Mines. In addition gravity measurements do not differentiate straight refinery and blended casing-head gasolines, which may vary widely in actual composition.

The determination of gravity has been, and probably always will be one of the most useful tests that the refiner employs, but it is of little value to the analyst who does not possess enough additional information to make proper interpretation of gravity results.

Methods of determining gravity are too well known to need discussion. The type of instrument chosen may be a hydrometer, a displacement balance (such as the Westphal), or a suitable pycnometer. Of these instruments the hydrometer is perhaps most convenient, the pycnometer least convenient. The accuracy in determination should be within 0.1 to 0.2 per cent. The oil industry expresses gravity as the ratio of the densities of oil and water at the temperature of 60° F.

In some laboratories the accepted practice is to use the temperature of 15° C. (59° F.) instead of 60° F. The discrepancy thus introduced is, however, generally less than the experimental error in measurement.

#### *Volatility.*

Volatility is the basic property that determines the grade and usefulness of gasoline. Unfortunately, it is a complex property, the grade and usefulness of which can not be stated in a few words, as different ranges of volatility are desirable for different conditions of use and these are subject to wide variation. Thus it may be noted that the same type of 13 gasoline is not equally desirable for airplane and truck motors, and that the type of motor fuel that would be most suitable for use in the Canal Zone might not give good results in Alaska. Hence, it is easily seen that a discussion of the desirable properties of volatility must necessarily be confined to generalities. There are, however, certain simple basic principles that merit brief consideration.

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(a) Rittman, W. F., Jacobs, W. A., and Dean, E. W., Physical and chemical properties of gasolines sold throughout the United States during the calendar year 1915: Tech. Paper 163, Bureau of Mines, 1916, p. 32.

In the first place, it is desirable to use as cheap a gasoline as can be made to yield satisfactory results. The men who have to pay for maintaining cars in service need no argument in support of this statement, and it is equally sound from another and broader point of view. In the interest of conservation it is desirable to draw lightly upon natural resources that are limited and to use, whenever possible, materials that are abundant. The more volatile fractions that go to make up gasoline are less plentiful and more expensive than the heavier constituents that are on the border line between gasoline and kerosene or burning oil.

Gasoline should, therefore, contain a moderate but not excessive proportion of low-boiling constituents. There should be sufficient volatile material to permit ready starting of a cold motor, but not enough to make the gasoline subject to high evaporation losses and unnecessarily costly, or dangerous in handling. The limitation of quantity of low-boiling constituents is particularly important in airplane gasoline as it obviates certain irregularities in carburetion that may occur at high altitudes, and reduces somewhat the danger of fire in case of leakage or breaking of supply tanks.

Ordinary motor gasoline should have a total volatility range wide enough to include constituents of relatively high-boiling points. For economic reasons of importance both to the individual user and the country as a whole, this volatility range should be such that the gasoline contains the largest possible percentage of the original crude oil. However, the range should not be wide enough to exceed the limits of the vaporizing power of the engine. These limits obviously vary with types of motor design and conditions of use. Thus it would be expensive folly to specify the same grade of gasoline for a motor truck that is required for delicately adjusted airplane engines designed to run most efficiently at altitudes ranging from 10,000 to 20,000 feet.

The general method of determining volatility is to subject gasoline to an analytical distillation. The results obtained are a function of the apparatus and method used as well as of the gasoline itself, and the method used should always be specified as well as the results. Distillation figures resemble flash-point figures in that in themselves they mean little. In

either case the method and apparatus used should be  
14 stated. For example, it should be said a gasoline has a certain distillation range with the A. S. T. M. method,

just as it is customary to say that an oil has a given flash point in the Pensky-Martens closed-cup tester.

### *Distillation Methods.*

Numerous distillation methods are in use in the petroleum industry, many of them undesirable and a small number of them based on sound practical requirements. No one distillation method is good for all purposes and in issuing this report the bureau has been forced to select one of several methods having strong claims for superiority. The most general need seems to be for a distillation method that will serve to differentiate gasolines reliably and that does not require too elaborate apparatus or too tedious manipulation. The American Society for Testing Materials has had occasion to adopt for the analysis of turpentine substitutes a method that seems to strike the right combination of simplicity and efficiency and is based on sound theoretical principles. To adapt this method to gasoline testing a few minor changes were necessary, the the most important being the substitution of a thermometer better adapted to gasoline distillation than the 400° C. instrument specified by the society, and the reading of temperatures as given amounts distill instead of reading the percentages distilling between given temperature limits.

### REVIEW OF THE GASOLINE SITUATION.

Before a system of actual specifications is discussed, it seems desirable to summarize the status of the gasoline market in January, 1919. During the last year or two the total production of refinable crude oil has not increased notably, although the demand for gasoline has continued to grow. The supply of gasoline has kept pace with the demand chiefly because of the use as motor fuel of a greater proportion of the crude oil refined. Cracking processes have helped to increase the supply, as also the recovery of gasoline from natural gas. In addition, many refiners have augmented their production by what is called "cutting deeper into the crude." Some of the fractions of petroleum that were formerly marketed under other names and for other purposes are now sold as gasoline, thus in effect increasing gasoline production. This practice has occasioned some discontent among users of cars, and statements are frequently made that motor gasoline now marketed has deteriorated in quality or has been adulterated. The Bureau of Mines has never detected an actual case of adultera-

tion among several hundred samples of gasoline collected in the open market, and is of the opinion that the change in quality is not necessarily a deterioration. In any event  
 15 users are getting better value for their money than they would if the older types of "high-test" gasolines were commonly supplied in the market.<sup>a</sup>

Gasoline producing and refining practice, which has been in a stage of transition during the last three or four years, is even now unsettled and information regarding the general situation is not in the possession of the bureau. During the calendar year 1917, when a survey of the country was made, gasoline marketed on the West Coast was more volatile than in the East, which in turn was more volatile than the type generally supplied in the Middle States. Some recent information indicates that this general condition still exists, but that there is a tendency toward the general adoption of Mid-Continent standards.

#### GENERAL CONSIDERATIONS IN PREPARING GASOLINE SPECIFICATIONS.

Through different sources the Bureau of Mines has been asked to assist in preparing gasoline specifications. The primary need was for Federal purchases in the District of Columbia. Later there were received requests for advice from State and municipal authorities who were contemplating the adoption of legal standards for regulating the quality of gasoline. Finally, the bureau had been required to aid in formulating specifications for various grades of gasoline required for military purposes.

In every instance the study of the following two important problems was necessary: (1) what particular type or types of gasoline were needed, and (2) how nearly the requirements could be satisfied in the market. As regards some gasoline, particularly that needed by the aviation service, the specification of grades that involve special refinery procedure was necessary. Generally, however, suitable grades were found in the market.

##### *Limits and Requirements of Gasoline Specifications.*

An ideal system of specifications would, by a minimum of simple requirements, eliminate all unsatisfactory products

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(a) For a detailed discussion of this subject see Dean, E. W.: Fuel for automotive apparatus, Jour. Soc. Automotive Eng., vol. 2, January, 1918, pp. 47 to 53.

without discriminating against any that are desirable. This ideal is impossible to attain for gasoline, partly because no hard and fast line differentiates good gasoline from bad, and partly because a satisfactorily simple specification can not cover all possible sources of discrepancy. In general, however, the tests discussed later furnish an adequate index of quality for the normal products marketed as gasoline, and will probably be satisfactory until such time as new and unfore-  
16 seen developments occur in the refining industry.

The requirements that are considered adequate for regulating the quality of gasoline sold for domestic use are color, freedom from corrosive agents, and volatility. Color is in itself of minor importance but generally, though not infallibly, indicates whether a gasoline is properly refined. At present refiners show little tendency to market gasolines that do not meet this requirement. The requirement of freedom from corrosive agents is important, and the simple test or tests for this property should be made even though the almost universal care taken by refiners has made it unnecessary.

In deciding upon a system of volatility limits two general factors must be considered. It is obvious that the points taken in the volatility range must be so selected as to define it. A specification that fixed only the initial boiling temperature and the 20 per cent mark would be practically useless; likewise a specification fixing only the upper distillation limit would be totally inadequate in determining the actual volatility range of gasoline. Therefore the volatility limits should include points both at the low and high ends of the distillation range. In addition limitation of some point in the middle of the curve is desirable as there are moderate possibilities of variation even if the ends of the curve are defined.

The second general consideration is that limits should be selected that permit easy and reliable measurement in the laboratory. The common practice in the industry has been to lay emphasis on so-called "initial" and "final" boiling temperatures. These points, particularly the former, are exceedingly difficult to determine with precision. Countless disputes and disagreements have occurred because of attempts to specify volatility in terms of these two troublesome points. Experience has shown that the various percentage marks between the limits of 10 and 90 per cent are easy to determine reliably, and that even as low a mark as the 5 per cent point is notably more reliable than the initial boiling point. In its own laboratories the Bureau of Mines has had little trouble in getting

check results in "dry-point" (one definition of final boiling temperature) determinations, but has been informed of numerous discrepancies among the results of different analytical laboratories. The bureau believes that specifications may require the measurement of final boiling temperature but that this limit should allow a sufficiently wide margin so that discrepancies in laboratory determinations will not discriminate against any properly refined gasolines that have a satisfactory 90 per cent mark.

The bureau recommends fixing the more volatile (low boiling) end of the distillation range by placing an upper and a lower limit on some selected temperature mark between the limits of 5 per cent and 20 per cent. The upper limit is necessary to insure the presence in the gasoline of enough low-boiling constituents to permit ready starting of a cold motor. The lower limit is to prevent the marketing of gasolines that are unnecessarily dangerous and subject to high evaporation losses. As regards facility of examination in the laboratory, the 20 per cent limit is most desirable, but if close regulation of quality is desired, as for aviation gasoline, it may be advisable to take a mark as low as the 5 per cent point.

#### PROPOSED SPECIFICATIONS FOR GASOLINE.

As already stated, the bureau believes that no one set of specifications is satisfactory for all needs. The following system is suggested, however, as a simple and satisfactory scheme for regulating the quality of ordinary automobile gasoline:

##### COLOR.

Requirements.—Water white.

Method of determination.—Inspection of the vertical column in a 4-ounce sample bottle or 100 c. c. graduate.

##### *Discussion.*

This simple test furnishes a fair but not infallible indication as to the care with which gasoline is refined.

##### ACIDITY.

Requirement.—Total absence of free or combined acid.

Method of determination.—The residue in the flask after completion of an analytical distillation shall be shaken thoroughly with 1 c. c. of distilled water. The water extract shall

be neutral in reaction. This may be determined by the use of any satisfactory indicator. Freedom from acidity is indicated by failure to color blue litmus paper pink, by failure to develop a reddish color when a few drops of methyl orange solution is added, or by the development of a red color on addition of a few drops of phenolphthalein solution and one drop of hundredth normal sodium hydroxide solution.

#### *Discussion.*

The experience of the Bureau of Mines indicates that an acid reaction is rarely or never discovered when the original gasoline is shaken with distilled water and the aqueous extract tested with a suitable indicator. Information<sup>a</sup> has been received that carelessly refined gasoline sometimes contains 18 acid compounds that decompose in the course of the distillation and leave free acid in the residue in the flask. This has led to recommendation of the test described above rather than the test given in Technical Paper 166.

#### VOLATILITY.

Requirements.—The gasoline shall, when distilled by the method described hereafter, meet the following requirements:

(a) The temperature read on the thermometer when 20 per cent has distilled shall not be below 70° C. (158° F.), nor above whatever limit is fixed after due consideration of conditions of use.

(b) The temperature read when 90 per cent has distilled shall not be above another limit similarly chosen.

(c) The temperature read when 50 per cent has distilled shall not be higher than a mark halfway between the upper 20 per cent limit and the 90 per cent limit.

(d) The dry point shall not exceed the 90 per cent limit by more than 40° C. (72° F.).

#### *Discussion of Temperature Limits.*

Several of the marks specified need not necessarily be fixed exactly as indicated above. The Bureau of Mines considers the 20 per cent point the most satisfactory low limit but recognizes that there is no great advantage over any other

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(a) Chemists of the Atlantic Refining Co. have advised the bureau that an acid reaction is sometimes discovered in the distillation residue when the original product appears to be neutral.

point between 5 per cent and 20 per cent. The 50 per cent point is recommended simply because no other intermediate point seems preferable. The 90 per cent point has been proven by experience to be the highest mark that is not likely to vary with slight discrepancies in experimental operation. "Dry point" is one of several possible definitions of final boiling temperature. The experience of the bureau has been that this point offers the greatest possibility of experimental agreement of the various marks used for final boiling temperature, but that it is difficult to formulate a definition that renders misunderstanding impossible. The bureau does not *not* approve of the definition that involves reading the temperature as the bottom of the flask goes dry or when a puff of white vapor is observed. Any percentage point between the limits of 96 to 98 per cent, however, may be used as a final mark, but care must be taken not to label it a "dry point."

#### DISTILLATION METHOD AND APPARATUS.

The distillation method recommended by the bureau is approximately that adopted by Subcommittee XI of Committee D1 of the American Society for Testing Materials.<sup>a</sup>

The two noticeable points of variation are the method of reading temperatures against fixed percentage points and the use of a thermometer of lower range. The method of the society is proposed for the analysis of turpentine substitutes which are petroleum products of higher boiling range than gasoline.

The apparatus used should be as follows. The particular form employed by the bureau is represented in figure 1 and differs somewhat in appearance, though not in the essential details, from that generally supplied in the market for this test.

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(a) American Society for Testing Materials, Year Book for 1915, pp. 568-569; or pt. 1, Committee Reports, 1916, vol. 16, pp. 518-521.

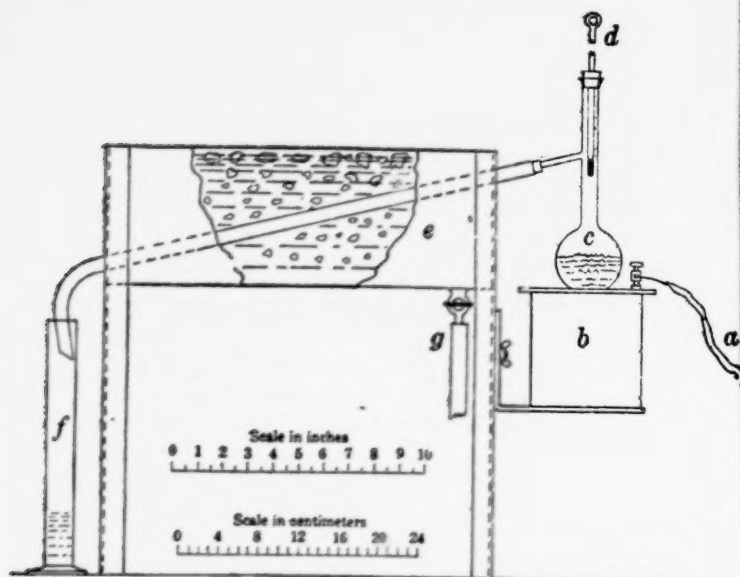


FIGURE 1.—Apparatus used by the Bureau of Mines for distillation test of gasoline. (a) Wires connecting with electric mains through a suitable rheostat. (b) Electric heater. (c) Engler distillation flask filled with charge of gasoline partly distilled. (d) Thermometer. (e) Condenser, with trough filled with ice and water. (f) Receiving graduate. (g) Cock for draining condenser trough.

### Flask.

The flask used shall be the standard 100 c. c. Engler flask, described in the various textbooks on petroleum. Dimensions (outside) are as follows:

#### Dimensions of flask.

Dimensions.	Cm.	Inches.
Diameter of bulb.....	6.5	2.56
Diameter of neck.....	1.6	0.63
Length of neck.....	15.0	5.91
Length of vapor tube.....	10.0	3.94
Diameter of vapor tube.....	0.6	0.24

- 20 Position of vapor tube, 9 cm. (3.55 inches) above the surface of the gasoline when the flask contains its charge of 100 c. c. The tube is approximately in the middle of the neck.

The flask shall be supported on a ring of asbestos having a circular opening  $1\frac{1}{4}$  inches in diameter; this means that

only this limited portion of the flask is to be heated. The use of wire gauze or a sand bath is not approved.

*Condenser.*

The condenser shall consist of a thin walled tube of metal (brass or copper) approximately one-half inch internal diameter and 22 inches long. It shall be set at an angle of  $75^{\circ}$  from the perpendicular and shall be surrounded with a cooling jacket of the trough type. The lower end of the condenser shall be cut off at an acute angle and shall be curved down for a length of 3 inches. The condenser jacket shall be 15 inches long.

*Thermometer.*

The accuracy of distillation depends primarily on the accuracy of the thermometer and on this account the instrument should be defined so that the results of different analysts may check. The thermometer described in the report of the American Society for Testing Materials is not adapted for use with gasoline. Its range is unnecessarily high and the lower temperatures are difficult to read, because of interference of the cork in the neck of the distillation flask.

The present discussion does not deal with the details of temperature measurement, but simply indicates requirements that should be met and that will insure the maximum variations in thermometer readings at different analytical laboratories not to exceed  $1^{\circ}$  to  $2^{\circ}$  C.

Briefly, the thermometer should be an accurate nitrogen-filled instrument with a short blub (length 10 to 15 mm., 0.39 to 0.59 inch) and with the mark for  $35^{\circ}$  C. ( $95^{\circ}$  F.) at a distance between 100 and 120 mm. (3.94 to 4.75 inches) from the top of the bulb. The thermometer should be scaled for total immersion.

The above requirements almost always permit the lowest temperature registered to be read above the cork of the distillation flask, and variations due to the so-called stem correction will always be practically the same. The stem correction should not be applied, but it should be understood that results of distillations are expressed in terms of thermometer readings and not in terms of actual temperatures. The use of partial-immersion thermometers is not recommended for distillations, as these instruments are no more likely to agree with one another than are the more common total-immersion thermometers.

The following specification for a gasoline distillation  
21 thermometer is offered so that the prospective purchaser  
may be able to state definitely what he requires and by  
so doing obtain a satisfactory instrument. The specification  
has been submitted to several manufacturers of thermometers,  
who state that it insures the obtaining of a satisfactory high-  
grade instrument without imposing on the maker unnecessary  
and troublesome restrictions that increase the cost.

*Specifications for Gasoline Distillation Thermometer.*

The thermometer should be made of selected enamel-backed tubing having a diameter between 5.5 and 7 mm. The bulb should be of Jena normal or Corning normal glass; its diameter should be less than that of the stem and its length between 10 and 15 mm. The total length of the thermometer should be approximately 380 mm. The range should cover 0° C. to 270° C., with the length of the graduated portion between the limits of 210 to 250 mm. The point marking a temperature of 35° C. should be not less than 100 mm. nor more than 120 mm. from the top of the bulb.<sup>a</sup>

The scale should be graduated for total immersion. The accuracy must be within about 0.5° C. The space above the meniscus must be filled with an inert gas, such as nitrogen, and the stem and bulb must be thoroughly aged and annealed before being graduated.

All material and workmanship must be of the best. The scale shall be marked for single-degree intervals. Each tenth degree shall be numbered and each fifth degree distinguished by a longer mark.

*Source of Heat in Gasoline Distillation.*

The source of heat in distilling gasoline may be a gas burner, an alcohol lamp, or an electric heater. The commonly used Tirrell type of gas burner is moderately satisfactory, but a burner having a smaller orifice and more sensitive regulating valve is more desirable. Such a burner has been developed and is used by the Philadelphia laboratory of the Atlantic Refining Co., and is described and shown in diagram in a recent journal article<sup>b</sup> published by permission of the bureau.

(a) If desired, a Fahrenheit thermometer may be obtained on these specifications by substituting Fahrenheit equivalents for the several centigrade marks.

(b) Dean, E. W., A convenient electric heater for use in the analytical distillation of gasoline: Jour. Ind. and Eng. Chem., vol. 10 (October, 1918), pp. 823-826.

Alcohol lamps may be employed in laboratories lacking a satisfactory gas supply. A type that has been tried by the bureau and found satisfactory is sold by the C. J. Tagliabue Mfg. Co., Brooklyn, N. Y. For the bulk of its own work the bureau has used specially designed and constructed electric heaters which have proved considerably more satisfactory than either gas or alcohol burners. This type of electric heater is described 22 in the journal article referred to in connection with the Atlantic Refining Co. gas burner.

Electric heaters are superior to the other types in that they permit more exact regulation of the degree of heat, are not subject to serious uncontrollable fluctuation (such as is caused by air currents) and involve a minimum danger of fire.

#### PROCEDURE AND DETAILS OF MANIPULATION IN CONDUCTING DISTILLATIONS.

1. If an electric heater is used it is started first to warm it.

2. The condenser box is filled with water containing a liberal proportion of cracked ice.

3. The charge of gasoline is measured into the Engler flask from a 100 c. c. graduate. This graduate is used as a receiver for distillates without any drying. This procedure eliminates errors due to incorrect sealing of graduates and also avoids the creation of an apparent distillation loss due to the impossibility of draining the gasoline entirely from the graduate.

4. The above-mentioned graduate is placed under the lower end of the condenser tube so that the latter extends downward below the top of the graduate at least 1 inch. The condenser tube should be so shaped and bent that the tip can touch the wall of the graduate on the side adjacent to the condenser box. This detail permits distillates to run down the side of the graduate and avoids disturbance of the meniscus caused by the falling of drops. The graduate is moved occasionally to permit the operator to ascertain that the speed of distillation is right, as indicated by the rate at which drops fall. The proper rate is from 4 c. c. to 5 c. c. per minute, which is approximately two drops a second. The top of the graduate is covered, preferably by several thicknesses of filter paper, the condenser tube passing through a snugly fitting opening. This minimizes evaporation losses due to circulation of air

through the graduate and also excludes any water that may drip down the outside of the condenser tube on account of condensation on the ice-cooled condenser box.

5. A boiling stone (a bit of unglazed porcelain or other porous material) is dropped into the gasoline in the Engler flask. The thermometer, equipped with a well-fitted cork and with its bulb covered with a thin film of absorbent cotton (preferably the long-fibered variety sold for surgical dressings), is fitted into the flask with the thermometer bulb just below the lower level of the side neck opening. The flask is connected with the condenser tube.

6. Heat is applied cautiously and the gasoline brought to its boiling point. In case it is desired to record the initial boiling point the thermometer is read when the first drop  
23 falls from the end of the condenser tube into the graduate.

The amount of heat is then increased so that the distillation proceeds at a rate of from 4 c. c. to 5 c. c. per minute. The thermometer is read as each of the selected percentage marks is reached. In case maximum boiling point or dry point (one definition of end point) is to be measured, the heating is continued after the flask bottom has boiled dry until the column of mercury reaches a maximum and then starts to recede consistently.

7. Distillation loss is determined as follows: The condenser tube is allowed to drain for at least five minutes after heat is shut off, and a final reading taken of the quantity of distillate collected in the receiving graduate. The distillation flask is removed from the condenser and thoroughly cooled as soon as it can be handled. This can be accomplished by using first an air bath and then immersing the bulb of the flask in the ice-water mixture in the condenser trough. The condensed residue is poured into a small graduate or graduated test tube and its volume measured. This residue is of course retained for the acidity test which has been described in an earlier connection. The sum of its volume and the volume collected in the receiving graduate, subtracted from 100 c. c. gives the figure for distillation loss. In case this loss exceeds 2 per cent, a check distillation should be run to ascertain whether such loss is due to the presence of highly volatile constituents or to failure to condense the lighter fractions on account of too strong heating at the beginning of the distillation.

*Discussion of Details of Procedure.*

Some of the prescribed details of procedure merit discussion. The use of a boiling stone is desirable to prevent "bumping," which occasionally occurs, especially when the Engler flask is new or freshly cleaned.<sup>a</sup> The film of cotton on the thermometer bulb retains a layer of condensed gasoline and insures against superheating, either in the course of the distillation or at the end point. Superheating manifests itself as an irregular fluctuation of the thermometer during distillation, or as an abnormal rise at the end. The film of cotton should be very thin and in case of doubt the quantity used (5 to 10 milligrams) should be weighed. If the material used is the long-fibered cotton sold for surgical purposes, the film rarely needs renewing as, if properly applied, it adheres tenaciously to the thermometer bulb.

Avoidance of an excessive distillation loss is important, as otherwise the temperature readings will be abnormally high. If blends containing considerable proportions of casing-head gasoline are distilled, it may be necessary to use an ice-salt freezing mixture in the condenser trough and to keep the receiving graduate immersed in a mixture of ice and water (preferably not the ice-salt freezing mixture). If this is done the gasoline must be cooled in ice and water before measuring it into the flask, or else a suitable allowance (approximately 3 per cent) must be made for the contraction of the gasoline due to cooling it from room temperature to the freezing point of water.

#### ADDITIONAL ANALYTICAL METHODS EMPLOYED IN THE TESTING OF GASOLINE.

In addition to the tests described in connection with the suggested system of specifications there are various analytical methods employed, sometimes for more elaborate types of specifications and sometimes for the purpose of obtaining information of a general nature. Some of the more important of these tests are listed and described as follows:

*The "Doctor" Test.*

The "Doctor" test is largely employed by refineries for detecting the presence of certain types of decomposable sul-

(a) Engler flasks should be occasionally cleaned to remove deposits of carbon. This can be easily accomplished by filling the bulb with chromic-sulphuric acid cleaning mixture and allowing to stand over night.

phur compounds. It does not determine the actual presence or absence of sulphur in gasoline, and, in fact, products that have been refined to pass this test are likely to contain a larger percentage of sulphur than before treatment. But gasoline not passing the doctor test is likely to decompose in storage with the development of a yellow color and an offensive odor. In addition, there is a possibility that gasoline "sour" to the doctor test may have been the cause of certain reported corrosion of metal parts of carburetors.

The doctor test shall be conducted and interpreted as follows:<sup>a</sup>

Obtain pure flowers of sulphur and prepare the sodium plumbite or doctor solution. For the latter, dissolve approximately 125 grams of sodium hydroxide (NaOH) in a liter of distilled water, add 60 to 70 grams of litharge (PbO) and shake vigorously for 15 to 30 minutes, or let it stand with occasional shaking for a day. Allow it to settle and pour or siphon off the clear liquid. If the solution fails to settle properly it may be filtered through a mat of asbestos. The solution must be kept in a bottle closed tightly with a cork stopper.

In making the test shake together vigorously two volumes of gasoline and one volume of the doctor solution (10 c. c. and 5 c. c. are convenient quantities) in a test tube; or, if preferred, an oil sample bottle may be used with correspondingly larger quantities. After shaking together for about 15 seconds, add a small pinch of flowers of sulphur, shake the tube again for 15 seconds and allow the contents to settle. The quantity of sulphur used shall be such that practically all of it floats on the surface separating the gasoline from the doctor solution.

If the gasoline is discolored, or if the sulphur film is so dark that its yellow color is noticeably marked, the test shall be reported as positive and the gasoline condemned as "sour." If the liquid remains unchanged in color and if the sulphur film is bright yellow or only slightly discolored with gray or flecked with black, the test shall be reported negative and the gasoline considered "sweet."

#### *Corrosion and Gummying Test.*

A test involving evaporation of gasoline in a polished copper dish was advised by F. C. Robinson and his associates of the Atlantic Refining Co. for determining the purity of air-

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(a) The bureau was aided in formulating a description of this test by C. J. Robinson, chemist of the Standard Oil Co. of New Jersey.

plane gasoline. The Bureau of Mines as yet lacks information on the desirability of applying this test generally to motor fuel, but is including a description of it for general information. The test seems to be a severe one, and failure to pass it may not mean that a gasoline is not satisfactory for ordinary uses.

A charge of gasoline is evaporated to dryness on a steam bath in a freshly polished hemispherical copper dish about  $3\frac{1}{2}$  inches in diameter. The dish is filled to within about three-fourths of an inch of the top, or a charge of 100 c. c. is measured in from a pipette.

The bottom of the dish must not be colored gray or black, as will be the case if elementary sulphur is contained in the gasoline. The presence of a peacock-colored deposit does not indicate sufficient sulphur to condemn the gasoline.

It is specified that a weighable residue shall not remain in the dish. Some preliminary experiments made by the bureau have indicated that the maximum allowable residue should be 0.03 per cent of the charge of gasoline evaporated.

#### *Unsaturation Test.*

Certain types of gasoline, particularly those derived from cracking processes, contain olefin and similar hydrocarbons. A simple test for determining the relative proportion of these constituents is furnished by the sulphuric acid absorption method. The bureau recommends the following procedure:<sup>a</sup>

The container recommended is that described in the catalogues of chemical supply houses as a 6-inch, 9-gram, 50 per cent Babcock cream bottle. The neck of such a bottle is calibrated for the volume of 4.5 grams of butter fat which is approximately 5 c. c. An ordinary 5 c. c. pipette can be regraduated to deliver this quantity. The gasoline to be tested is measured into a clean, dry Babcock bottle, cooled by immersion for a minute or two in ice water, after which 200 per cent by volume of ordinary concentrated sulphuric acid is poured in from a small graduate. Care should be taken that the acid runs quietly down the side of the bottle, instead of splashing onto the surface of the gasoline. A rubber stopper is then placed in the bottle and the contents are shaken, first slowly, then vigorously with a rotary motion for several min-

(a) Dean, E. W., and Hill, H. H., Determination of unsaturated hydrocarbons in gasoline: Tech. Paper 181, Bureau of Mines, 1917, 25 pp.

utes. The gasoline and the acid are separated by either of the following methods:

*Gravity Separation.*

Sulphuric acid is added to the contents of the bottle until the surface of the liquid is about level with the upper graduation mark on the neck of the bottle. The mixture is then set aside and allowed to stand overnight, until practically complete separation is effected.

*Centrifugal Separation.*

The stoppered bottle is placed in a suitable centrifuge and revolved for two or three minutes at a speed of 500 to 1,000 r. p. m. Sufficient acid is added to bring the level up to the lower graduation mark, and the bottle and its contents are again centrifuged to complete the separation. More acid is added to bring the column to the upper graduation mark, after which the residual volume of gasoline is read.

## VAPOR PRESSURE.

In order to insure safety in the shipment of gasoline by tank car a vapor pressure test is required. The limit usually prescribed is 10 pounds per square inch.

The standard method prescribed by the Bureau of Explosives<sup>b</sup> is briefly as follows:

*Apparatus.*

The apparatus consists of the well-known inspectors' gas gage (made by the Pittsburgh Gage & Supply Co., Pittsburgh, Pa.) and a metal test cylinder of about 450 c. c. capacity (approximately 9 inches long and  $2\frac{1}{8}$  inches in diameter, outside dimensions) with an opening at the top for a standard one-fourth inch taper screw fitting. Accessories are thermometers, water bath of any convenient sort, temperature regulating media, and a small measure, the capacity of which is exactly one-tenth the capacity of the test cylinder.

*Procedure.*

The test cylinder is filled to exactly 90 per cent of its capacity. This can be accomplished conveniently by filling to the top and then pouring out enough to fill the small measure

(b) Report of the Chief Inspector of the Bureau of the Safe Transportation of Explosives and Other Dangerous Articles, Feb., 1916, pp. 27-30.

mentioned in the preceding paragraph. The gage is screwed in tightly and the test cylinder immersed in water at a temperature of 21° C. (70° F.) and shaken gently for a few minutes until the gasoline has come to the temperature of the bath (five minutes is considered sufficient). Then the gage is unscrewed and the pressure released for a period of 20 seconds. The cylinder is closed again by screwing the gage in, using if necessary something like liquid shellac to make the joint tight.

The test cylinder is placed in a water bath at 38° C. (100° F.)—32° C. (90° F.) from November 1 to March 1—with the water level just below the lower edge of the pressure gage. The water is stirred continually and the temperature maintained constant for 10 minutes. The gage is then tapped lightly and the pressure read.

This test is one with which the Bureau of Mines has had little experience. It seems to be open to objection on the ground that the pressure developed may be affected by the degree of agitation to which the gasoline is subjected. The bureau is not, however, in a position to suggest modifications or improvements.

### FORMS FOR RECORDING THE RESULTS OF GASOLINE ANALYSES.

In keeping laboratory records of gasoline analysis the bureau has had occasion to employ two forms which have proved particularly convenient and which are reproduced in the present paper for purposes of information. The forms are designed for recording more information than is needed for specification analyses and are the types the bureau has selected for its own use. Form 1 is a blank record for tabulating results of the physical examination and analysis of the gasoline. On Form 2 are shown typical distillation curves for straight refinery and blended casing-head gasolines, to which reference has already been made.

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## GASOLINE ANALYSIS.

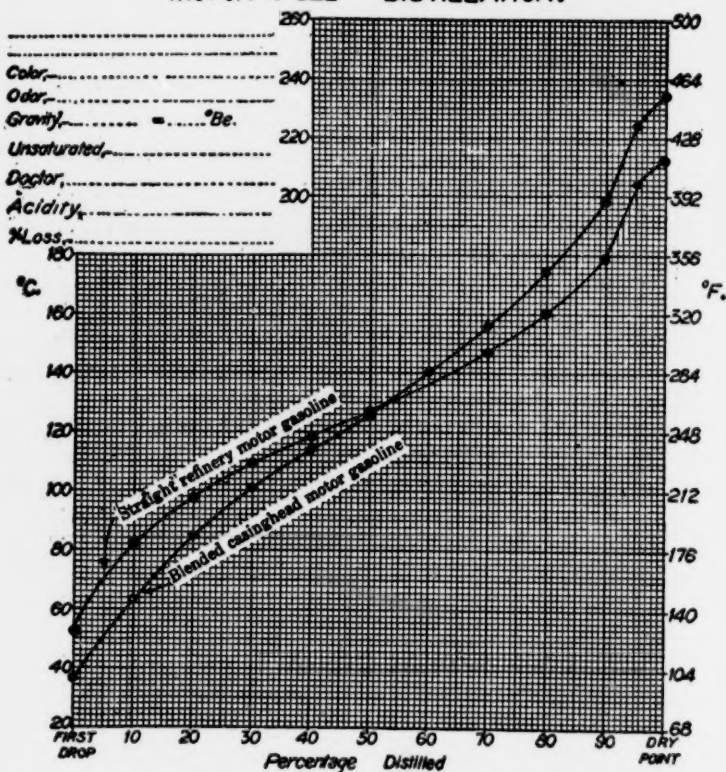
Sample No. ....

.....  
 .....  
 .....  
 Gravity.....Deg. B.....  
 Color..... Odor.....  
 Acidity..... Doctor test.....  
 Unsaturation.....per cent.  
 Distillation in 100-cc. Engler flask; barom.....mm.

<i>Mark.</i>	<i>Temperature.</i>	
	Deg. C.	Deg. F.
First drop	.....	.....
10 per cent	.....	.....
20 per cent	.....	.....
30 per cent	.....	.....
40 per cent	.....	.....
50 per cent	.....	.....
60 per cent	.....	.....
70 per cent	.....	.....
80 per cent	.....	.....
90 per cent	.....	.....
95 per cent	.....	.....
Dry point	.....	.....
Average	.....	.....
Distillation loss.....	per cent.	

FORM 1.—Form for recording results of gasoline analysis.

U.S. BUREAU OF MINES  
**MOTOR FUEL DISTILLATION.**



FORM 2 (fig. 2).—Graphic chart for recording results of gasoline analysis.

Form 1 is generally made up as a  $3\frac{3}{4}$  by  $6\frac{3}{4}$  inch sheet, punched for inclosure in a standard size loose-leaf binder or notebook. Form 2 is used as a  $6\frac{3}{4}$  by 7 inch sheet, which when folded once can be carried in the same book. Form 2 is generally printed on semi-transparent paper so that copies of analytical results can be made by the process of blue printing.

*Centigrade-Fahrenheit Temperature Transformation Table.*

On account of the common use of the two temperature scales, centigrade and Fahrenheit, some simple means of translating figures recorded in these two systems is desirable. Table 1 following has been employed by the bureau and found particularly convenient.

Table 1.—*Degrees contigra<sup>d</sup>e to degrees Fahrenheit.*

	0	1	2	3	4	5	6	7	8	9
0	32	34	36	37	39	41	43	45	46	48
1	50	52	54	55	57	59	61	63	64	66
2	68	70	72	73	75	77	79	81	82	84
3	86	88	90	91	93	95	97	99	100	102
4	104	106	108	109	111	113	115	117	118	120
5	122	124	126	127	129	131	133	135	136	138
6	140	142	144	145	147	149	151	153	154	156
7	158	160	162	163	165	167	169	171	172	174
8	176	178	180	181	183	185	187	189	190	192
9	194	196	198	199	201	203	205	207	208	210
10	212	214	216	217	219	221	223	225	226	228
11	230	232	234	235	237	239	241	243	244	246
12	248	250	252	253	255	257	259	261	262	264
13	266	268	270	271	273	275	277	279	280	282
14	284	286	288	289	291	293	295	297	298	300
15	302	304	306	307	309	311	313	315	316	318
16	320	322	324	325	327	329	331	333	334	336
17	338	340	342	343	345	347	349	351	352	354
18	356	358	360	361	363	365	367	369	370	372
19	374	376	378	379	381	383	385	387	388	390
20	392	394	396	397	399	401	403	405	406	408
21	410	412	414	415	417	419	421	423	424	426
22	428	430	432	433	435	437	439	441	442	444
23	446	448	450	451	453	455	457	459	460	462
24	464	466	468	469	471	473	475	477	478	480
25	482	484	486	487	489	491	493	495	496	498
26	500	502	504	505	507	509	511	513	514	516
27	518	520	522	523	525	527	529	531	532	534
28	536	538	540	541	543	545	547	549	550	552
29	554	556	558	559	561	563	565	567	568	570
30	572	574	576	577	579	581	583	585	586	588
31	590	592	594	595	597	599	601	603	604	606
32	608	610	612	613	615	617	619	621	622	624
33	626	628	630	631	633	635	637	639	640	642
34	644	646	648	649	651	653	655	657	658	660

# 31 PUBLICATIONS OF PETROLEUM TECHNOLOGY.

A limited supply of the following publications of the Bureau of Mines has been printed and is available for free distribution until the edition is exhausted. Requests for all publications can not be granted, and to insure equitable distribution applicants are requested to limit their selection to publications that may be of especial interest to them. Requests for publications should be addressed to the Director Bureau of Mines.

The Bureau of Mines issues a list showing all its publications available for free distribution as well as those obtainable only from the Superintendent of Documents, Government Printing Office, on payment of the price of printing. Interested persons should apply to the Director, Bureau of Mines, for a copy of the latest list.

## *Publications Available for Free Distribution.*

Bulletin 120.—Extraction of gasoline from natural gas by absorption methods, by G. A. Burrell, P. M. Biddison, and G. G. Oberfell. 1917. 71 pp., 2 pls., 15 figs.

Bulletin 134.—The use of mud-laden fluid in oil and gas wells, by J. O. Lewis and W. F. McMurray. 1916. 86 pp., 3 pls., 18 figs.

Bulletin 148.—Methods for increasing the recovery from oil sands, by J. O. Lewis. 1917. 128 pp., 4 pls., 32 figs.

Bulletin 149.—Bibliography of petroleum and allied substances—1915, by E. H. Burroughs. 1917. 147 pp.

Bulletin 158.—Cost accounting for oil producers, by C. G. Smith. 1917. 123 pp.

Bulletin 162.—Removal of lighter hydrocarbons by J. M. Wadsworth. 1918. 164 pp., 50 pls., 45 figs.

Bulletin 163.—Methods of shutting off water in oil or gas wells, by F. B. Tough. 1918. 122 pp., 20 pls., 7 figs.

Bulletin 170.—Extinguishing and preventing oil and gas fires, by C. P. Bowie. 1918. 50 pp., 19 pls., 4 figs.

Technical Paper 32.—The cementing process of excluding water from oil wells, as practiced in California, by Ralph Arnold and V. R. Garfias. 1913. 12 pp., 1 fig.

Technical Paper 38.—Wastes in the production and utilization of natural gas, and methods for their prevention, by Ralph Arnold and F. G. Clapp. 1913. 29 pp.

Technical Paper 42.—The prevention of waste of oil and gas from flowing wells in California, with a discussion of

special methods used by J. A. Pollard, by Ralph Arnold and V. R. Garfias. 1913. 15 pp., 2 pls., 4 figs.

Technical Paper 45.—Waste of oil and gas in the Mid-Continent fields, by R. S. Blatchley. 1914. 54 pp., 2 pls., 15 figs.

Technical Paper 49.—The flash point of oils, methods and apparatus for its determination, by I. C. Allen and A. S. Crossfield. 1913. 31 pp., 2 figs.

Technical Paper 66. Mud-laden fluid applied to well drilling, by J. A. Pollard and A. G. Heggem. 1914. 21 pp. 12 figs.

Technical Paper 68.—Drilling wells in Oklahoma by the mud-laden fluid method, by A. G. Heggem and J. A. Pollard. 1914. 27 pp., 5 figs.

Technical Paper 72.—Problems of the petroleum industry, results of conferences at Pittsburgh, Pa., August 1 and September 10, 1913, by I. A. Allen. 1914. 20 pp.

Technical Paper 79.—Electric lights for oil and gas wells, by H. H. Clark. 1914. 8 pp.

Technical Paper 87.—Methods of testing natural gas for gasoline content, by G. A. Burrell and G. W. Jones. 1916. 26 pp., 7 figs.

Technical Paper 117.—Quantity of gasoline necessary to produce explosive vapors in sewers, by G. A. Burrell and H. T. Boyd. 1916. 18 pp., 4 figs.

Technical Paper 120.—A bibliography of the chemistry of gas manufacture, by W. F. Rittman and M. C. Whittake, compiled and arranged by M. S. Howard. 1915. 30 pp.

Technical Paper 127.—Hazards in handling gasoline, by G. A. Burrell. 1915. 12 pp.

Technical Paper 131.—The compressibility of natural gas at high pressures, by G. A. Burrell and I. W. Robertson. 1916. 11 pp., 2 figs.

Technical Paper 158.—Compressibility of natural gas and its constituents, with analyses of natural gas from 31 cities in the United States, by G. A. Burrell and I. W. Robertson. 1917. 16 pp., 9 figs.

Technical Paper 161.—Construction and operation of a single-tube cracking furnace for making gasoline, by C. P. Bowie. 1916. 16 pp., 10 pls.

Technical Paper 163.—Physical and chemical properties of gasoline sold throughout the United States during the calendar year 1915, by W. F. Rittman, W. A. Jacobs, and E. W. Dean. 1916. 45 pp., 4 figs.

Technical Paper 181.—Determination of unsaturated hydrocarbons in gasoline, by E. W. Dean and H. H. Hill. 1917. 25 pp.

Technical Paper 185.—Use of the interferometer in gas

analysis, by F. M. Seibert and W. C. Harpster. 1918. 18 pp., 1 pl., 5 figs.

*Publications That May Be Obtained Only Through the Superintendent of Documents.*

Bulletin 19.—Physical and chemical properties of the petroleum of the San Joaquin Valley, Cal., by I. C. Allen and W. A. Jacobs, with a chapter on analyses of natural gas from the southern California oil fields, by G. A. Burrell. 1911. 60 pp., 2 pls., 10 figs. 10 cents.

Bulletin 32.—Commercial deductions from comparisons of gasoline and alcohol tests on internal-combustion engines, by R. M. Strong. 1911. 38 pp. 5 cents.

Bulletin 43.—Comparative fuel values of gasoline and denatured alcohol in internal-combustion engines, by R. M. Strong and Lauson Stone. 1912. 243 pp., 3 pls., 32 figs. 20 cents.

Bulletin 65.—Oil and gas wells through workable coal beds; papers and discussions, by C. S. Rice, O. P. Hood, and others. 1913. 101 pp., 1 pl., 11 figs. 10 cents.

Bulletin 88.—The condensation of gasoline from natural gas, by G. A. Burrell, F. M. Seibert, and G. G. Oberfell. 1915. 106 pp., 6 pls., 18 figs. 15 cents.

Bulletin 114.—Manufacture of gasoline and benzene-  
33 toluene from petroleum and other hydrocarbons, by W. F. Rittman, C. B. Dutton, and E. W. Dean, with a bibliography compiled by M. S. Howard. 1915. 258 pp., 9 pls., 45 figs. 35 cents.

Bulletin 125.—The analytical distillation of petroleum, by W. F. Rittman and E. W. Dean. 1916. 79 pp., 1 pl., 16 figs. 15 cents.

Technical Paper 3.—Specifications for the purchase of fuel oil for the Government, with directions for sampling oil and natural gas, by I. C. Allen. 1911. 13 pp. 5 cents.

Technical Paper 10.—Liquified products of natural gas, their properties and uses, by I. C. Allen and G. A. Burrell. 1912. 23 pp., 5 cents.

Technical Paper 25.—Methods for the determination of water in petroleum and its products, by I. C. Allen and W. A. Jacobs. 1912. 13 pp., 2 figs. 5 cents.

Technical Paper 26.—Methods for the determination of the sulphur content of fuels, especially petroleum products, by I. C. Allen and I. W. Robertson. 1912. 13 pp., 1 fig. 5 cents.

Technical Paper 36.—The preparation of specifications for petroleum products, by I. C. Allen. 1913. 12 pp., 5 cents.

Technical Paper 37.—Heavy oil as fuel for internal-combustion engines, by I. C. Allen. 1913. 36 pp. 5 cents.

Technical Paper 51.—Possible causes of the decline of oil wells, and suggested methods of prolonging yield, by L. G. Huntley. 1913. 32 pp., 9 figs. 5 cents.

Technical Paper 53.—Proposed regulations for the drilling of oil and gas wells, with comments thereon, by O. P. Hood and A. G. Heggem. 1913. 28 pp., 2 figs. 5 cents

Technical Paper 57.—A preliminary report on the utilization of petroleum and natural gas in Wyoming, by W. R. Calvert, with a discussion of the suitability of natural gas for making gasoline, by G. A. Burrell. 1912. 23 pp. 5 cents.

Technical Paper 70.—Methods of oil recovery in California, by Ralph Arnold and V. R. Garfias. 1914. 57 pp., 7 figs. 5 cents.

Technical Paper 74.—Physical and chemical properties of the petroleum of California, by I. C. Allen, W. A. Jacobs, A. S. Crossfield, and R. R. Matthews. 1914. 38 pp., 1 fig. 5 cents.

Technical Paper 104.—Analysis of natural gas and illuminating gas by fractional distillation in a vacuum at low temperatures and pressures, by G. A. Burrell, F. M. Seibert, and I. W. Robertson. 1915. 41 pp., 7 figs. 5 cents.

Technical Paper 109.—Composition of the natural gas used in 25 cities, with a discussion of the properties of natural gas, by G. A. Burrell and G. G. Oberfell. 1915. 22 pp. 5 cents.

Technical Paper 115.—Inflammability of mixtures of gasoline vapor and air, by G. A. Burrell and H. T. Boyd. 1915. 18 pp., 2 figs. 5 cents.

Technical Paper 130.—Underground wastes in oil and gas fields and methods of prevention, by W. F. McMurray and J. O. Lewis. 1916. 28 pp., 1 pl., 8 figs.

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#### Government's Exhibit 152.

Date	Inspector	Tank	Description	
6-24-18	Hanson	923	Cracked Gas	"
6-28-18	Hanson	923	Pts Nap	x
7-30-18	Hanson	Adg	Pts Nap	"
8-5-18	Hanson	Adg	Pts Nap	"
8-15-18	Weiman	Adg	Pts Nap	"
8-23-18	Hanson	Adg	Pts Nap	"
9-16-18	Hanson	Adg	Cracked Gas	"
9-30-18	Hanson	Adg	Cracked Gas	"
10-29-18	Hanson	923	Cracked Gas	"
11-4-18	Hanson	923	Cracked Gas	"
11-14-18	Hanson	923	Cracked Gas	"
12-2-18	Joliet	923	Cracked Gas	"
12-9-18	Hanson	923	Cracked Gas	x

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Exhibit 152--Continued.

Date	Inspector	Tank	Description	
12-17-18	Hanson	923	Cracked Gas	"
12-23-18	Hanson	923	Cracked Gas	"
1-6-19	Weiman	923	Hy Ptrs	"
1-17-19	Hanson	923	Crk Gaso	"
1-21-19	Hanson	923	Crk Gaso	"
2-4-19	Hanson	923	Crk Gaso	x
3-15-19	Hanson	Agd	Printers Nap	"
3-17-19	Hanson	Agd	Printers Nap	"
3-18-19	Hanson	x	Printers Nap	"
3-20-19	Hanson	843	Printers Nap	"
3-22-19	Hanson	Adg.	Printers Nap	"
4-7-19	Hanson	Adg.	Printers Nap	x
4-18-19	Hanson	Adg.	Printers Nap	x
2-28-18	Weiman	838	Printers Nap	"
3-22-18	Kooner	838	Printers Nap	x
4-9-18	Weiman	823	Printers Nap	"
4-10-18	Weiman	838	Printers Nap	"
4-12-18	Weiman	838	Printers Nap	"
4-12-18	Weiman	838	Printers Nap	"
4-15-18	Weiman	838	Printers Nap	"
5-7-18	Otey	923	Printers Nap	"
5-15-18	Weiman	923	Printers Nap	"
5-20-18	Weiman	923	Printers Nap	"
5-21-18	Weiman	923	Printers Nap	"
7-5-18	Weiman	923	Printers Nap	"
7-15-18	Weiman	923	Cracked Gas	"
8-15-18	Weiman	x	Painters Nap	"
8-22-18	Weiman	923	Cracked Gas	x
8-28-18	Porter	923	Cracked Gas	"
9-1-18	Weiman	923	Cracked Gas	"
9-3-18	—	923	Cracked Gas	"
9-5-18	Porter	923	Cracked Gas	"
9-24-18	Weiman	923	Cracked Gas	"
10-7-18	Weiman	923	Cracked Gas	"
10-13-18	Weiman	923	Cracked Gas	"
10-14-18	Weiman	923	Cracked Gas	"
10-20-18	Joliet	8x	Cracked Gas	"
10-25-18	Hanson	x	Cracked Gas	"
11-18-18	Joliet	923	Cracked Gas	"
11-19-18	Joliet	923	Cracked Gas	x
11-26-18	Joliet	923	Cracked Gas	"
11-27-18	Hanson	923	Cracked Gas	"
12-2-18	Joliet	923	Heavy Painters N	"

## Exhibit 152—Continued.

Date	Inspector	Tank	Description
12-23-18	Weiman	923	Heavy Painters N "
12-23-18	Weiman	923	Heavy Painters N x
12-31-18	Weiman	923	Heavy Painters N "
1-6-19	Weiman	923	Heavy Painters N "
1-18-19	Joliet	923	Heavy Painters N "
1-28-19	Weiman	923	Heavy Painters N "
1-25-19	Crow	x	Heavy Painters N "
1-29-19	Crow	x	Heavy Painters N "
2-3-19	Weiman	923	Heavy Painters N "
2-9-19	Weiman	923	Heavy Painters N "
2-10-19	x	923	Heavy Painters N "
2-15-19	Joliet	Agts 5	Heavy Painters "
2-15-19	Weiman	Agts 5	Naph "
2-17-19	Joliet	Agts 6	Naph "
2-18-19	Weiman	Agts 6	Naph "
2-21-19	Stansbury	Agts 5	Painters Nap "
2-24-19	Joliet	Agts 6	Painters Nap "
2-24-19	x	Agts 6	Painters Nap "
3-4-19	Joliet	Agts 6	Painters Nap "
3-6-19	Joliet	Agts 6	Painters Nap "
3-19-19	Stansbury	843	Painters Nap "
3-24-19	Joliet	Agt 4-5	Painters Nap "
3-25-19	Stansbury	Agt 4-5	Painters Nap "
3-25-19	Stansbury	Agt 4	Painters Nap "
4-2-19	Stansbury	Agt 6	Painters Nap "
4-3-19	Stansbury	Agt	Painters Nap "
x	x	Agt 5	Painters Nap "
4-10-19	Joliet	Agt 4	Painters Nap "
4-10-19	x	Agt 5	Painters Nap "
572			
4-16-19	Joliet	Agt 3	Painters Nap "
4-22-19	Stansbury	843	Painters Nap "
4-25-19	Stansbury	Agt 4	Painters Nap "
4-26-19	Cameron	Agt 3	Painters Nap "
4-28-19	Rushing	Agt 1	Painters Nap "
4-29-19	Rushing	Agt 1	Painters Nap "
4-29-19	Stansbury	Agt 1	Painters Nap "
5-2-19	Rushing	206	Painters Nap "
5-6-19	Stansbury	205	Painters Nap "
5-7-19	Stansbury	206	Painters Nap "
5-8-19	Joliet	Agt 6	Painters Nap "
5-14-19	Stansbury	205	Painters Nap "
5-15-19	Stansbury	204	Painters Nap "
5-23-19	Rushing	205	Painters Nap "

## Exhibit 152—Continued.

Date	Inspector	Tank	Description
5-26-19	Joliet	Agt 6	Painters Nap "
5-29-19	Joliet	201	Painters Nap "
6-2-19	Rushing	204	Painters Nap
6-10-19	Stansbury	843	Painters Dist.
6-10-19	Stansbury	206	Painters Nap
6-18-19	Stansbury	843	Painters Dist
6-20-19	Joliet	x	Painters Nap
6-20-19	Stansbury	843	Painters Dist
6-23-19	Stansbury	843	Painters Nap
6-24-19	Stansbury	843	Painters Dist
6-28-19	x	843	Painters Nap

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Book	Page	Tank	Descrip	Date
No. 2	20	Agt 203	Painters Nap	9-16-16
2	82	Agt 2	"	9-22-16
2	130	Agt 1	"	10-18-16
2	188	Agt 5	"	11-17-16
2		205		
2	94	Agt 204	"	11-18-16
1	112	Agt 1	"	11-28-16
1	142	838	"	12-12-16
1	172	838	"	12-26-16
2	286	838	"	1-8-17
2	340	838	"	2-5-17
3	34	838	"	3-9-17
3	44	838	"	3-14-17
3	54	838	"	3-19-17
3	72	838	"	3-26-17
3	84	838	"	4-2-17
3	118	838	"	4-16-17
3	132	838	"	4-23-17
3	150	838	"	4-30-17
3	164	838	"	5-7-17
3	170	838	"	5-9-17
3	176	838	"	5-11-17
3	180	838	"	5-14-17
3	194	x	"	5-21-17
Not shipped				
3	198	838	"	5-22-17
3	242	838	"	6-11-17
3	264	838	"	6-20-17
3	270	838	"	6-22-17

## Exhibit 152—Continued.

Book	Page	Tank	Descrip	Date
3	274	Adg 206	"	6-25-17
			574	
3	280	838	"	6-27-17
3	288	x	"	7-2-17
3	304	838	"	7-9-17
3	336	838	"	7-23-17
3	348	838	"	7-27-17
3	352	838	"	7-30-17
4	24	x	"	4-10-17
4	54	838	"	4-21-17
4	128	838	"	5-29-17
4	150	838	"	6-5-17
4	346	838	"	8-30-17
4	358	x	"	9-5-17
No. 5	4	838	"	8-10-17
5	9	838	"	8-13-17
5	37	838	"	8-27-17
5	44	x	"	8-29-17
5	70	838	"	9-11-17
5	85	838	"	9-18-17
5	146	838	"	10-15-17
5	183	838	"	11-1-17
5	188	838	"	11-4-17
5	214	838	"	11-15-17
5	221	838	"	11-17-17
5	250	838 & 805	"	12-4-17
5	263	838	"	12-11-17
5	306	838	"	1-5-18
5	316	838	"	1-10-18
5	340	838	"	1-24-18
5	347	838	P. N.	1-26-18
6	28	838	Ptr-Nap	9-21-17
6	35	838	"	9-24-17
			575	
6	40	838	"	9-26-17
6	50	838	"	10-1-17
6	73	838	"	10-8-17
6	108	838	"	10-22-17
6	115	838	"	10-24-17
6	144	838	"	11-5-17
6	177	838	"	11-19-17
6	180	838	"	11-21-17
6	186	838	"	11-23-17
6	196	838	"	11-28-17

## Exhibit 152—Continued.

Book	Page	Tank	Descrip	Date
6	208	838	"	12-3-17
6	240	838	"	12-16-17
6	246	838	"	12-17-17
6	262	838	"	12-14-17
6	272	838	"	12-28-17
6	304	838	"	1-9-17

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Date	Inspector	Tank	Description
2-18-18	Otey	838	Printers Nap
2-19-18	Otey	838	Printers Nap
3-1-18	Otey	838	Printers Nap
3-4-18	Otey	838	Printers Nap
3-25-18	Otey	838	Printers Nap
4-6-18	Otey	923	Printers Nap
4-8-18	Otey	838	Printers Nap
4-9-18	Weiman	838	Printers Nap
4-11-18	Otey	838	Printers Nap 576
2-4-18	Koonce	838	Printers Nap
2-12-18	Koonce	x	Printers Nap
3-11-18	Koonce	838	Printers Nap
3-18-18	Koonce	838	Printers Nap
3-19-18	Koonce	x	Printers Nap
3-20-18	Koonce	838	Printers Nap
3-21-18	Koonce	838	Printers Nap
4-22-18	Koonce	x	Printers Nap
4-23-18	Koonce	x	Painters Nap
5-8-18	Koonce	923	Painters Nap
5-8-18	Koonce	923	Painters Nap
5-27-18	Koonce	923	Painters Nap
6-4-18	Koonce	923	Painters Nap
6-10-18	Koonce	923	Painters Nap
6-10-18	Koonce	923	Painters Nap
6-17-18	Otey	923	Painters Nap
6-17-18	Koonce	923	Painters Nap
7-21-18	Koonce	923	Cracked Gas

Endorsed: Filed Jan. 10, 1921, W. V. McClure, Clerk U. S. District Court, Eastern District of Oklahoma.

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And on the same day, to-wit, the 10th day of January A. D. 1921, the defendant filed petition for writ of error, together with its assignment of errors, which petition was allowed by the court. Said petition for writ of error, assignment of errors and order allowing writ of error are in words and figures as follows:

In the United States District Court of the Eastern District of Oklahoma. United States of America, Plaintiff, vs. Gulf Refining Company, a Corporation, Defendant.—No. 3716 Criminal.

**Petition for Writ of Error.**

To the Honorable Robert L. Williams, Judge of the United States District Court for the Eastern District of Oklahoma:

Now comes the Gulf Refining Company, a corporation, defendant in the above and foregoing cause, and conceiving itself aggrieved by the final order, decree, judgment and sentence entered in the above entitled cause on the 10th day of January, 1921, in favor of the United States and against this defendant, shows unto this Honorable Court that in the record, proceedings and rendition of such final order, decree, judgment and sentence entered as aforesaid, manifest error herein occurred greatly to its damage, and by which it feels itself aggrieved, all of which more fully and particularly appears in and from the Assignments of Error which is filed with this petition.

Wherefore, said Gulf Refining Company prays that a Writ of Error be issued in said cause to the United States Circuit Court of Appeals of the Eighth Circuit, for the correction of said errors, and the reversal of said cause, directing the Clerk of this Court to transmit to the Clerk of the United States Circuit Court of Appeals of the Eighth Circuit, at St. Louis, Missouri, for filing in said court a true and correct copy and transcript of the record in said cause within sixty days from date hereof, to-wit, on or before the 11th day of March, 1921, in order that said manifest error may be corrected and justice done, and that a citation be issued to the United States of America requiring the United States to be and appear in said Circuit Court of Appeals of the Eighth Circuit, at St. Louis, Missouri, within sixty (60) days from the date of said citation, to show cause, if any it have, why said manifest error should not be corrected and justice done.

The said Gulf Refining Company, having filed herein its assignments of error, also prays that in addition to issuance of said Writ of Error, that an order be made superseding the final order, judgment, decree and sentence entered in said cause, and an order be made and entered fixing the amount of security which said defendant will be required to give and furnish to supersede said judgment and the cost of said Writ of Error, and that defendant be allowed ten (10) days from this date in which to furnish said security, and that said final order, judgment, decree and sentence in said cause be superseded for and during the ten (10) days allowed for the furnishing of said security, and that on the furnishing of said security and the approval thereof, that said judgment, final order, decree and sentence be superseded and stayed until the final disposition of the said Writ of Error and the proceedings had thereon. And said defendant herewith submits its Assignments of Error.

R. L. BATTS,

JNO. E. GREEN, JR.,

JAMES B. DIGGS,

FRANK M. SWACKER,

*Attorneys for Gulf Refining Company.*

Endorsed: Filed in open court Jan. 10, 1921, W. V. McClure, Clerk U. S. District Court.

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In the District Court of the United States, for the Eastern District of Oklahoma. United States of America, Plaintiff, against Gulf Refining Company, Defendant.—No. 3716. Criminal.

**Assignments of Error and Prayer for Reversal.**

Filed January 10, 1921.

The defendant, Gulf Refining Company, assigns as error prejudicial to it in the record, proceedings, judgment and sentence of the court, in the above-entitled cause, that the court erred:

1. In sustaining the plaintiff's demurrer to defendant's plea in abatement as to each count of the alleged indictment herein, because the same was not a true bill found according to law by the grand jury.

II. In denying defendant's motion to strike the alleged indictment herein from the files of the court as not being a true bill found according to law by the grand jury.

III. In overruling and denying defendant's motion to take proof on its motion to strike said alleged indictment from the files as not being a true bill found according to law by the grand jury.

IV. In overruling and not sustaining defendant's special demurrer, to the counts numbered 36 to 40, inclusive, and 81 to 85, inclusive, of the said indictment, because the said counts are double, in that each of said counts attempts to charge two separate and distinct offenses, that is, (a) the offense of accepting a concession whereby property should be transported at less than the lawful rates, and (b) accepting a concession whereby a discrimination would be procured.

V. In overruling and not sustaining defendant's demurrer to each count of the indictment, which demurrer should have been sustained upon each of the following grounds, to-wit:

(a) Because the matters and things set forth and charged do not constitute an offense against the laws of the United States.

(b) Because the averments of each count of said indictment are too general, vague, indefinite and uncertain to inform the defendant of the nature and cause of the accusation against it, or apprise it with such reasonable certainty of the offense with which it is charged or what it may expect to meet on the trial, so as to enable it to make its defense.

(c) Because the averments of each count of said indictment are so vague, indefinite and uncertain, consisting in the pleader's conclusion, as to what constitutes a concession, that the court is unable to say as a matter of law whether the acts of defendant constitute an offense against the United States.

VI. In denying defendant's motion to instruct a verdict for the defendant, based on the admissions of the Government in its opening statement to the jury that it proposed to prove that defendant had shipped casinghead gasoline and casing-

head gasoline blended with naphtha, whereas the indictment charges the defendant with having shipped gasoline, for the following reasons:

(a) Because it was apparent that the proof would be at variance with the charge in the indictment.

(b) Because it is a scientific fact, of which the court has judicial knowledge, that casinghead gasoline is not the same commodity as, but different from, gasoline.

(c) Because the admission that the commodity actually shipped was casinghead gasoline and not gasoline disclosed that the controversy involved the construction and determination of whether the tariff naming rates on gasoline embraced and applied to casinghead gasoline, or whether the tariff on unrefined naphtha embraced and applied to casinghead gasoline, of which character of controversy the court had no jurisdiction, such jurisdiction being vested solely in the Interstate Commerce Commission.

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And in admitting evidence at the trial offered by the United States and overruling the defendant's objections thereto, to which rulings the defendant then and there duly excepted, in each of the following instances, to-wit:

VII. In permitting Exhibit No. 1 to be read in evidence, said exhibit being set forth in full in defendant's bill of exceptions and in substance showing that all the stock, excepting shares held by directors, of the Gulf Refining Company, Gypsy Oil Company and Gulf Pipe Line Company, was owned and controlled by the Gulf Oil Corporation.

VIII. In admitting the testimony of the witness Riedeman in substance that prior to December 2, 1916—the date upon which the tariff publishing rates on unrefined naphtha became effective, and that description was adopted by the Gypsy Oil Company—the Gypsy Oil Company had been accustomed to describe its shipments from Kiefer, Oklahoma, to Port Arthur, Texas, as gasoline, such evidence having been admitted by the court upon the theory of establishing a course of conduct, whereas there was no showing of a similarity in material respects of the surrounding circumstances, the evi-

dence on the contrary showing dissimilarity in the vitally material respect that there was no tariff publishing rates on unrefined naphtha previous to said date.

Said testimony being as follows:

"By the Court: As shown in Exhibit 2 of this identical commodity according to his best recollection were made, were billed out as gasoline. You have got that in so I will not permit you to put these in the record, I will not permit them to be introduced, in the record, he has already testified.

"By Mr. Swacker: We interpose an objection to the testimony on the ground of irrelevancy.

"By the Court: Very well I will permit that, these prior shipments made under the direction of the same superintendent, Mr. Mallard?

"A. Yes, sir.

"By the Court: I will permit that to show the conduct of their business.

"By Mr. Swacker: If your honor understands the basis of our objection we don't deny——

"By the Court: That comes afterwards as a matter of explanation.

"By Mr. Swacker: But we deny the relevancy. This is attempting to show a rule or course of conduct in respect to other things than those alleged in the indictment and we say any explanation of such course of conduct must be negatived at this time and for that reason it is incompetent, irrelevant and immaterial.

"By the Court: I will permit it for this reason. The Government says this was gasoline and not unrefined naphtha. That is their contention now the shipments from the same points by the same concern that conducted the business that is the circumstance for the jury to consider in weighing the evidence. This was prior to a certain date that they shipped it as gasoline. Now they may of course, I am assuming the explanation that will be admitted on the part of the name used by the defense they could have called it either name and for certain reason and for their convenience they used either name. I will instruct the jury not to make up your minds on any part of the evidence; that when you hear the evidence in this case you always keep your minds open remembering

all of the evidence as near as you can and keep your minds open and hear the last part of the evidence and then keep your mind open and not make up your mind until you have heard the argument and the instructions of the court.

"By Mr. Diggs: We want to get in an exception. We object to the introduction of the evidence as incompetent, irrelevant and immaterial.

"By Mr. Payne: What evidence.

"By Mr. Diggs: The answer of the witness the court permitted him to answer. And for the further reason the Government states that it is for the purpose of proving a course of conduct and the fact surrounding the different shipments not being shown to be identical and similar in the material respects of the rate and for the further reason that at the time the ten papers in Exhibit 2 mentioned the only rate in existence by which it could be shipped was the classification of gasoline as shown by the tariff.

"By the Court: Now on these shipments that are referred to originated at the same point Kiefer and brought the same rate to Port Arthur.

"A. Yes, sir.

"By the Court: And was the same material—same commodity according to your best recollection?

"Yes, sir.

"By the Court: And shipped for the same purpose.

"Yes, sir.

"By the Court: Very well you may have your exception." (S. M., pp. 46-48.)

IX. In admitting the evidence while the witness Sweet was on the stand in substance to the effect that the material shipped northbound from Port Arthur to Kiefer by the Gulf Refining Company before December 2, 1916, was described by it as naphtha, whereas thereafter it was described by it as crude unfinished naphtha; December 2, 1916, being the date upon which the tariff publishing rates on crude unfinished naphtha became effective; said evidence having been admitted by the court for the purpose of showing the conduct of defendant's business, whereas there was no showing of similarity of surrounding circumstances, but, on the contrary, the evidence showed such

circumstances to be different in a vitally material respect in that previous to said date there were no tariffs published naming rates on crude unfinished naphtha.

Said testimony being as follows:

"The Court: I understand prior to December 2, 1916, that the government offers to prove——

"Mr. Chambers: That the northbound shipments——

"The Court: That this commodity which was shipped from Port Arthur to Kiefer for the purpose of being blended with the casinghead gas was billed as naphtha.

"Mr. Swacker: Yes, sir.

"The Court: And that after December 2nd it was billed as crude naphtha?

"Mr. Swacker: Crude unfinished naphtha. We don't want this statement in the record that we put it in.

"The Court: No, I said the government, and the defendants save an exception to its relevancy or materiality in order to shorten the record, admit the fact.

"By Mr. Swacker: We want the basis of our objection——

"By the Court: And the court admits this for the purpose for showing the conduct of the business and during that period and grant an exception to the defendant.

"By Mr. Swacker: And we want to go further and state the basis of our objection. We assume this evidence to be offered as stated by the court indicating the course of conduct and we say it would be admissible only if it were shown that all the surrounding circumstances were identical, especially the material circumstances that under the evidence as stated there was a change in the rate which was the most material circumstance, and no offer has been made to prove that the circumstances were identical or such a basis as would admit this evidence and wherefore we say it is incompetent, irrelevant and immaterial.

"By the Court: For the present it is admitted and your exceptions saved." (S. M., pp. 73, 74.)

X. In admitting the testimony of the witness Sweet as follows:

"Q. You never called the blended stuff you shipped from Kiefer, unrefined naphtha until after the 2nd of December, 1916, did you? A. No, sir.

"Mr. Swacker: We object to that on the same ground as the previous question.

"By the Court: Very well.

"By Mr. Swacker: Give us an exception.

\* \* \* \* \*

"Q. You never heard the product that is produced from the compression plant called unrefined naphtha until after the 2nd of December, 1916, and you know that prior to that time it was always called casinghead gasoline and is yet?

"By Mr. Diggs: To which we object, incompetent, irrelevant and immaterial and the witness not being shown to have a knowledge, assumed to him that it was called this prior to December 2, 1916.

"By the Court: Objection overruled. You may have an exception.

"Mr. Diggs: To the last part of the question we object as calling, or assuming that the witness knows a state of facts that is not shown in evidence that he does know. The first part we have no objection.

"The Court: I will let him answer.

"Mr. Green: We object to the method. It is not shown that the witness is entirely unwilling to answer.

"The Court: I will permit it.

"Mr. Green: And I think it is argumentative—

"The Court: Answer the question.

"A. After that date it was known as unrefined naphtha and prior to that date, commonly known as gasoline." (S. M., pp. 77-80.)

XI. In admitting the testimony of the witness Sweet as follows:

"Q. Now after the 2nd of December, 1916, you say you shipped this commodity at Kiefer that was blended as unrefined naphtha to Port Arthur? A. Yes, sir.

"Q. At that same time you shipped this same commodity that was blended to a Shady Side, Pennsylvania, as gasoline, didn't you?

"By Mr. Swacker: Object to both the form of the question as a deliberate attempt to get out a fact which we insist is irrelevant and to the answer on the same ground that it is utterly irrelevant, the circumstance not being shown as to what the rates and regulations provided to Shady Side.

"By Mr. Diggs: Further that it is an assumption that the Gypsy has shipped and that this witness knows.

"By the Court: I will permit the form of the question. I have heard the evidence of this witness but I want to see. You say at the same time while you were shipping this product from Kiefer to Port Arthur as unrefined naphtha you were shipping it to the Shady Side plant at Pittsburgh? Now who owns the plant at or near Pittsburgh?

"A. Gulf Refining Company.

"The Court: And what was it shipped there for, what purpose was it shipped to Shady Point?

"A. I am not in a position to say. It was shipped there, that is a distributing point I believe, I have never been there, I don't know what it is.

"The Court: I will permit the question to be asked.

"Mr. Diggs: We save an exception.

"The Court: Very well.

"Q. Answer the question. Do you remember the question?

"A. That is with reference to shipping to Pittsburgh?

"Q. Yes. A. Yes, sir.

"Q. And you shipped it as gasoline?

"A. Yes, sir, and we shipped it—

"Mr. Chambers: Now I never asked you that.

"The Court: If he wants to volunteer that, that is a matter for the jury to determine. Go ahead if you want to volunteer an explanation, the court will permit you to do that.

"A. We shipped this product to Port Arthur as unrefined naphtha because the tariff gave us a rate to Port Arthur. They didn't give us a rate to Pittsburgh and consequently we shipped it to Pittsburgh as gasoline.

"Q. In other words, until the unrefined naphtha rate from your standpoint is put into effect, the designated term for shipping purposes of this commodity is gasoline. that is right? A. The only term we had for it.

"Q. Only term you had for it and shipped it as gasoline for that reason? A. Yes, sir.

"Mr. Swacker: Now we would like to renew our objection to this line of questions and ask that it be stricken out obviously as immaterial and wholly irrelevant, it being apparent the conditions were not the same.

"The Court: That is a question of fact for the jury to determine. They are the facts and the jury looks into them and sees. I think it is all right to make this explanation to show he is an employee of the oil company. The jury weighs that and weighs the reasons, if there are any reasons, and they weigh it. That is the issue in this case, the way I understand it, if it is properly termed under this tariff 'Unrefined Naphtha'. I will permit all this evidence to go to the jury for them to weigh it.

"Mr. Swacker: We want an exception.

"The Court: Very well." (S. M., pp. 91-93.)

XII. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 5, 6, 7, 8 and 9, consisting in shipping orders of the Gypsy Oil Company covering shipments from Kiefer to Port Arthur made previous to December 2, 1916, in which the commodity was described as gasoline, and the testimony of the witness Manson in relation thereto.

Said testimony being as follows:

"Q. I am handing you papers identified by the stenographer as Exhibits 5, 6, 7, 8 and 9 and ask you what they are and if you signed them? A. Yes, sir, I did.

"Q. What is the date of Exhibit No. 5?

"A. November 2nd.

"Q. And what is the date of Exhibit No. 6?

"A. November 4th.

"Q. And what is the date of Exhibit No. 7?

"A. November 7th.

"Q. And Exhibit 8?

"A. November 11th, I didn't sign that one marked Exhibit 8.

"Q. What are those papers, the general term?

"A. They are bills of lading.

"Q. They are bills of lading? A. Yes, sir.

"By the Court: Who signed Exhibit No. 8, if you know?

"A. Mr. Millard.

"By the Court: Who?

"A. He was Superintendent, Assistant Superintendent.

"Q. Do you know his handwriting?

"A. Yes, sir, I believe that is it.

"Mr. Chambers: We will offer these in evidence, if the court please.

"The Court: Show them to the other side.

"Q. What was the year? A. I believe it was 1916.

"Mr. Swacker: We desire to object to these as being incompetent, irrelevant and immaterial, they being matters not properly proven as under similar circumstances and conditions, but on the contrary the evidence already in the case showing a different set of circumstances and conditions surrounding it.

"The Court: What is that they are offering?

"Mr. Swacker: They are shipments before December 2, 1916.

"Mr. Chambers: And shipped as gasoline.

"The Court: I will admit them.

"Mr. Swacker: Exception, please.

"Mr. Chambers: May I ask the court, will it be proper instead of reading these—

"The Court: They may be considered read and you may call attention to them later.

"Mr. Chambers: Then they can be considered as read?

"The Court: They may be considered as read. They are only admitted for the purpose of showing the conduct of the business.

"Mr. Chambers: That is all.

"The Court: And the evidence is already in and the only reason I admit them now is because there was an objection to them and then I am going to instruct the jury they are not to give undue importance to this evidence; that is the reason I excluded them you know.

"Mr. Chambers: Of course we have no other evidence in connection with that.

"The Court: The defense by their objection brought the admission of the papers themselves on themselves." (S. M., pp. 160-162.)

XIII. In admitting in evidence and permitting to be read to the jury that portion of Exhibit Number 2, consisting in shipping orders of the Gypsy Oil Company dated prior to December 2, 1916, describing shipments of gasoline, and the testimony of the witness Riedeman relating thereto.

Said testimony being as follows:

"Q. Your name is Riedeman? A. Yes, sir.

"Q. I am handing you a bunch of what purports to be shipping orders and embracing ten shipping orders, marked yesterday as Exhibit 2, and I will ask you to state if those shipping orders were made out by you while you were in the employ of the Gypsy Oil Company?

"A. They were.

"Q. And those shipments made from—well, I don't know, where were they made from?

"A. I will have to look at those.

"Q. I don't know where to look.

"A. From Kiefer to Port Arthur.

"The Court: Where were the other shipments, that other batch from?

"Mr. Chambers: Kiefer, Oklahoma, it states there.

"The Court: Where to?

"Mr. Chambers: Kiefer, Oklahoma, to Port Arthur. Now we will offer these in evidence.

"Mr. Swacker: We desire to make the same objection to these as being matters *res inter alia*, and no proper foundation laid for the introduction, the circumstances already in evidence showing that the rates were different at the time these shipments were made, all being before December 2, 1916.

"The Court: I will permit them to be introduced.

"Mr. Swacker: We except.

"The Court: To show the conditions, and I will instruct the jury later on, and they may be marked and considered as read. Of course when the question arises and where all the evidence is in, if there is a theory reasonable and in accordance with all the evidence the contention of the defendant as to the change, then that will destroy any evidential presumption that may be raised in favor of the government. I will cover that in instructions later on.

"Mr. Swacker: I except.

"Mr. Swacker: We may have an exception.

"The Court: Very well." (S. M., pp. 162, 163.)

XIV. In admitting the testimony of the witness Waddell, the agent of the Kansas City Southern Railroad, in substance that he collected the rate applicable to gasoline upon the shipments, moving previous to December 2, 1916, covered by the shipping orders embraced within Exhibit 2.

Said testimony being as follows:

"Referring to Government's Exhibit No. 2, covering shipments from Kiefer, Oklahoma, in November, 1916, and by the Gypsy Oil Company, gasoline department, and consigned to the Gulf Refining Company at Port Arthur, and billed as gasoline, can you state what rate was collected on those shipments?"

"The Court: What basis of rate?"

"Q. What basis of rate?"

"Mr. Swacker: As he puts the question, he can or will he?"

"The Court: He is asking if he can state——"

"Mr. Swacker: We object to the question as being irrelevant, incompetent and immaterial.

"Q. Mr. Waddell, as a general railroad practice——"

"The Court: No, he has not answered the question yet.

"A. The freight charges were collected on the rate, gasoline rate.

"The Court: On the rates prescribed for gasoline?"

"A. Yes, sir.

"The Court: The commodity shipped as gasoline?"

"A. Yes, sir." (S. M., p. 213.)

XV. In permitting the Government's counsel to read from a book described by him as Exhibit 21, not in evidence, respecting which the witness Timmons testified as follows:

"By Mr. Payne: Mark this Government's Exhibit 21.

"Q. I show you exhibit 21 for identification and call your attention to the second and third and fourth and fifth and sixth entries which show gasoline——"

"By Mr. Swacker: I object to his question.

"By the Court: Let him get the question in and don't answer until I pass on it.

"Q. As to Tanks 511, 512, 805, 357 and 922 I will ask you to state to the court if you know how the inspectors, how the inspectors inspected the contents of those tanks to determine the fluid in those tanks was gasoline?

"By Mr. Swacker: I object to the witness testifying about the papers, it is now shown he ever saw it or knows anything about it or he made the entries or he had anything to do with it and he testifies the inspector was not under his direction.

"By the Court: The question is if you know how they determine that. That is merely for the purpose of identification of a fact, directing the attention of the witness to it. If you know how the inspector determines, by what process to determine whether that was gasoline, if you know that you may answer that.

"A. This report is not complete.

"The Court: Now you answer the question, do you know how they determined that?

"A. I know how they determine it.

"The Court: Very well.

"Q. State that?

"The Court: What is that now?

"Q. He says he knows how they determine it, state it then.

"A. Well, they take gravity, color and distillation.

"Q. Is it not a fact that if the gravity is fifty-seven or above, you designate it as gasoline, and that if it is fifty-six or some few points below, fifty-six or fifty-five, the inspectors designate it as naphtha; if it is between fifty-five and fifty-seven they come to you for instructions as to whether they will designate it as gasoline or as naphtha?

"A. They don't come to me for instructions at all. I stated before that was not left to me at all.

"The Court: Now, you have answered the first part. You ought not to put so many questions in one. Now you asked him three questions in one, and he answered the last.

"Mr. Payne: Thank you for the suggestion.

"Q. If the gravity—is it not a fact that if the grav-

ity is fifty-seven or higher, it is the general custom and course of business to designate the fluid in that tank as gasoline?

"A. Might be with them, but it ain't with me.

"The Court: What was it the custom in that laboratory?

"A. The custom shows here that is what they called it.

"Q. That is, they called it gasoline if the gravity was fifty-seven or higher? A. Yes.

"Q. Suppose that the gravity was fifty-five, what was it the custom to designate it on those sheets?

"A. Well, it shows here——

"The Court: Well, never mind what is on that sheet. I don't permit what is on that sheet. What did they do, what did the experts in the laboratory whose duty it was to examine the samples, now what did they do, how did they designate it?

"Mr. Swacker: I object to that, it is not shown that these are experts, they are boys and under somebody else's instructions; and he is stating what he assumes to be the custom of those boys in making these tests.

"The Court: Well, he testified they worked in the laboratory; you would naturally assume that they were experts. What experience did those people that make the tests have?

"A. Weighing up the oil and running distillations and taking color.

"The Court: Well, did that experience qualify them to do that kind of work?

"A. Yes, sir.

"The Court: The qualification that is required in the usual oil laboratory for such people. Now I will give you all a chance to cross examine as to qualification if you want to.

"Mr. Swacker: At this time?

"The Court: Yes, I will permit you just like on voir dire to ask questions, and I will pass on whether they are qualified to do that.

*Examination by Mr. Swacker.*

"Q. What is the age of these inspectors you speak of?

"A. They run from eighteen, twenty-five, twenty-six and twenty-seven years old.

"Q. Are they what you might consider as student chemist? A. No, sir, not in that department.

"Q. Are they chemists at all? A. No, sir.

"Q. They merely perform the distillation tests which is a mechanical process? A. Yes, sir.

"Q. And put down the instances shown by the distillation test? A. Yes, sir.

"Q. They have nothing to do with the classification of the material they test? A. No, sir.

"Q. Whatever name they may use or enter is such as they themselves may adopt without any effort of accuracy as a matter of classification, not such as they may be instructed to? A. Yes, sir.

"Q. Is that right? A. Yes, sir.

"By Mr. Swacker: I don't think the entries are admissible—

"By the Court: These boys as you call them that work there in making these tests to determine the color and the gravity, they determine the gravity and the color and what else do they determine?

"A. They determine the distillation—

"By the Court: The distillation, the color and the gravity, now how would they determine it?

"A. By weight of the oil.

"By the Court: They determine the distillation by the weight?

"A. Run through an Engler flask.

"By the Court: Run it through an Engler flask and that would show the distillation would it?

"A. Yes, sir.

"By the Court: And then they took the color by what means, by what means did they take the color?

"A. Through a machine, two tubes to it, one is empty and the other is filled up with this oil, there is a middle faucet on that and a microscope on the top and by looking through they match these two colors. When both discs match, that was your color.

"By the Court: Now there is a distillation, the process of determining distillation and the process of determining the color, now the next is determining the specific gravity, how did they do that?

"A. That is by hydrometers and a thermometer.

"By the Court: Now their experience in making these tests under the processes outlined by you?

"A. Yes, sir, they could do that if they had enough experience they could.

"By the Court: Well were they tested before they were put in there to do that kind of work?

"A. They were broke into it, they gradually worked up to it.

"By the Court: Now you say they were fitted to determine the distillation and the specific gravity and the coloring. Now how would they determine what it was, where did they get that?

"A. That might have been their own conception of it.

"By the Court: Now were they instructed as to that by their superior officers who were expert chemists?

"A. I cannot say I don't know about that.

"By Mr. Swacker: May I ask another question?

"By the Court: Yes.

*Examination by Mr. Swacker.*

"Q. They had nothing to do with the classifying of this material? A. No, sir.

"Q. That was no part of their work? A. No, sir.

"Q. All they were there for to determine or ascertain what the distillation was, what the gravity was and what the color was and record that? A. Yes, sir.

"Q. And that was the classification so far as any classification was made? A. Yes, sir.

"Q. There was no classification by name? A. No, sir.

"By the Court: How it is competent, after the processes of making these records, I hold the evidence shows they were expert enough to determine the specifications, gravity and the distillation and as to the coloring by these processes. I will let that much go to the jury. Now then you can introduce as to the name of it, you will either have to show that was done by an expert or they were instructed by an expert as to the names to meet the tests to determine by it.

"By Mr. Swacker: Then will the court ask the jury to disregard those entries.

"By the Court: These entries have not been introduced, the jury don't consider anything except what is admitted in evidence before them. That is merely a predicate thus far and not admitted to the jury and merely shown to the witness for directing his attention to a question." (S. M., pp. 234-240.)

XVI. In admitting in evidence and permitting to be read to the jury Exhibits 21 and 22, and admitting the testimony of the witness Anderson in respect to the practice of the Totem Gasoline Company; for the reasons that the practice of the Totem Gasoline Company was in no way binding upon this defendant, that it was not shown that the material circumstances surrounding the business of the Totem Gasoline Company were identical or similar to those surrounding shipments to defendant, that the manner in which the Totem Gasoline Company described its products for shipment was not competent to prove what was the proper name of the commodity shipped by the Gypsy Oil Company, and that it was not competent to prove a general custom by showing individual instances; said testimony being as follows:

"Q. State your position with the Totem Gasoline Company?

"A. I am general superintendent over the four plants.

"Q. Where are the four plants located?

"A. The Totem is at Jenks, the Kadeshan and Shade at Stone Bluff, and Kadeshan is at Broken Arrow.

"Q. Now referring to the plant at Jenks, state what kind of a plant it is and what you produce.

"Mr. Diggs: To which we object as being incompetent, irrelevant and immaterial. The Gulf Refining Company—

"The Court: What is the purpose of this offer?

"Mr. Payne: Your honor, certain counts allege discrimination against the Totem Gasoline Company in that—I will state it if you want me to.

"The Court: Yes.

"Mr. Payne: In that they shipped casinghead gasoline and billed it on the railroad as casinghead gasoline or gasoline, and they paid the gasoline rate, and we will show that their product is precisely the same product.

"The Court: Very well, get your objection.

"Mr. Diggs: We object as being incompetent, irrelevant and immaterial, not within the issues of this case, and not being shown that the Gulf Refining Company is connected with or interested in any of the plants with which the witness has said that he is connected, and that their practice and method of

shipment would be hearsay as far as the defendant in this case is concerned.

"The Court: I will allow your exception.

"Mr. Diggs: Exception.

"Q. What kind of a plant is it, Mr. Anderson?

"A. It is a compression,—

"Q. Compression what? A. Gasoline plant.

"Q. Compression gasoline plant? A. Yes, sir.

"The Court: You want to confine this to the period named in the indictment.

"Q. During the period from January 1, 1918, to June 1, 1918, did the Totem Gasoline Company of Jenks produce casinghead gasoline?

"Mr. Diggs: To which we object as being irrelevant, incompetent and immaterial, and not within any of the issues raised in this case, and the defendant is not shown to be connected with any such plant.

"The Court: The objection is overruled.

"Mr. Diggs: The defendant excepts.

"A. (No response.)

"Q. State briefly the process by which you produce casinghead gasoline, very briefly?

"Mr. Diggs: We object—hold on.

"The Court: Have your objection on the same ground, the objection is overruled and exception noted.

"Mr. Diggs: In order to preserve the record, and under some of the rulings we have to state what our objections are. To state we have them on the same ground does not amount to anything.

"The Court: On the same ground as stated above, just say the same objection made on the same ground as above, and the same ruling and exceptions allowed.

"Q. I asked you how you produced—

"By Mr. Diggs: The defendant in this case states his objection in that manner owing to the direction of the court.

"By the Court: That will be allowed as if set out word for word as above. Go ahead, let's get through.

"Q. Answer the question, Mr. Anderson?

"A Produce the gasoline by the regular system of compression plants.

"Q. That is go ahead, tell how you get the gas out of the well and what is done with it?

"A. It is pumped to the plant by vacuum pumps.

"By Mr. Diggs: To which we object on the same grounds state- above.

"By the Court: Same grounds set out specifically as above and the objection is overruled and exception save-.

"Q. Go ahead Mr. Anderson.

"A. And is discharged from the vacuum pump to the compressors which run from a low stage to 40 or 50 pound pressure, whatever your load is and then goes to the high stage which is compressed from 375 to 400 and then put into the coils and condensed and the accumulation of that condensation is what makes the raw gasoline.

"Q. Now after the raw gasoline is produced do you blend it with any product? A. Yes, sir.

"By Mr. Diggs: To which we object—

"By the Court: Objection on the same ground overruled and exception saved.

"Q. What do you blend it with?

"By Mr. Diggs: Same objection and exception as above by direction of the court.

"By the Court: Overruled, exception saved.

"A. Blended usually with naphtha.

"Q. Do you weather it after you blend it?

"A. If the vapor tension is too high to ship.

"Q. Well now what do you mean by vapor tension?

"By Mr. Diggs: To which we object as being incompetent and immaterial, not relating to the issues in this case.

"By the Court: Overruled, exception saved.

"A. The vapor tension is the pressure that gathers on the tank after it is confined from agitation or raising of the temperature.

"Q. Why do you weather it, in order to lower that vapor tension?

"By Mr. Diggs: To which we object as incompetent, irrelevant and immaterial, the witness not being shown to act under direction or in concert with the defendant in this case. The manner in which he operates this plant being hearsay and immaterial to this case.

"By the Court: Objection overruled, exception allowed.

"Q. I want to bring out for what purpose you lower the vapor tension? A. To make it safe in shipment.

"Q. How did you describe this product for shipment?

"By Mr. Diggs: To which we object as incompetent, irrelevant and immaterial and hearsay as far as the defendant is concerned and not the best evidence.

"By the Court: I will permit to state how it is billed out. I will permit you to introduce the shipping orders.

"Mr. Payne: Mr. Reporter, mark these two papers Government's Exhibits 22 and 23.

(Said papers were so marked by the Reporter.)

"Q. Mr. Anderson, I show you two papers marked Government's Exhibits 22 and 23—pardon me, Mr. Diggs—and I will ask you to state what they are. I will show them to you in just a moment.

"The Court: Answer the question.

"A. They are forms of bills of lading we use in billing out our product from our gasoline plant.

"The Court: Is that a bill of lading used by them? A. Yes, sir.

"Q. Are those bills of lading in your handwriting, Mr. Anderson? A. Yes, sir.

"Mr. Payne: I offer these in evidence—I beg your pardon.

"Q. State if those shipments were shipments from the points shown on those bills of lading, and state to whom the shipments were consigned and who they were consigned to.

"Mr. Diggs: To which we object as being irrelevant, incompetent and immaterial and not the best evidence.

"The Court: Not the best evidence why?

"Mr. Diggs: To ask him what they state.

"The Court: Here is the way it looks to me—the way to get that in.

"The Court: What do you want to do now?

"Mr. Payne: I offer these in evidence. Strike that out.

"Q. State if you shipped the cars referred to in those bills of lading?

"Mr. Diggs To which we object as incompetent, irrelevant and immaterial, and calls for a conclusion of the witness.

"Q. Do you know what was loaded in those cars?

"A. Yes, sir.

"The Court: Now I will let you prove and describe what was in them, the kind of commodity it was.

"Q. Mr. Anderson, describe what was in the cars?

"A. It was blended gasoline.

"Mr. Diggs: Hold on—to which we object as incompetent, irrelevant and immaterial, hearsay, and this witness has no authority to constitute evidence against this defendant.

"The Court: I will instruct the jury that this evidence will not be considered as any evidence proving as to the name of this material. It will only be introduced for the purpose of showing these shipments, so that if afterwards you find from the evidence submitted to you that what was shipped was not in fact under the rules of law was not in fact unrefined naphtha but was gasoline, that then that lays a predicate on the question of discrimination, but it is not to be considered as any evidence on the issue as to whether or not the commodity that was shipped under these indictments was gasoline.

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"Mr. Diggs: Note my exceptions to the ruling of the court.

"By the Court: Describe what that commodity was described in that bill of lading. What it is, where it came from and what it was from and then I will let you go further, probably. You know how to answer that.

"By Mr. Diggs: Was that a question to the witness?

"By the Court: You have your exceptions.

"By Mr. Diggs: Not to that question.

"By the Court: You may have your exception to it on the same grounds named in the other.

"A. It was gasoline blended with naphtha of 72 gravity, 72 to 71 gravity.

"By the Court: What was it made from, that is the question.

"A. It was made from casinghead gas—natural gas.

"By the Court: How?

"A. By compression system.

"By the Court: Had you done anything else to it in any other way?

"A. No, sir.

"By the Court: Now you may go ahead.

"Q. State how that shipment of that product that you have described was billed?

"By the Court: Did you ship any of it anywhere, ship any of it to Port Arthur?

"A. Yes, sir.

"By the Court: From Jenks?

"A. Yes, sir.

"The Court: Now go ahead.

"Q. State how the shipments were described.

"The Court: Now, have you got the bill of lading of that shipment?

"Mr. Payne: These are the bills of lading?

"The Court: Is that the bill of lading?

"A. Yes, sir.

"The Court: Now, identify it.

"Q. Do you identify that as being in your own handwriting? A. Yes, sir.

"Mr. Payne: We offer these in evidence.

"Mr. Diggs: To which we object as being incompetent, irrelevant and immaterial, not being a purported bill of lading, but an instrument made in the handwriting of the witness, not of the railroad company nor its agent.

"By the Court: Let me see it.

"Mr. Diggs: And the evidence of the witness shows—on the further ground the evidence of the witness shows the material shipped was not gasoline but casinghead gasoline.

"The Court: Who is George Anderson, is that your name?

"A. Yes, sir.

"The Court: Now this is not a bill of lading, this is a shipping order.

"A. That is what we use for a bill of lading?

"The Court: Who gave you these?

"A. My company.

"Q. Is that your order to the railroad company to transport these cars? A. Yes, sir.

"The Court: Well that is what is known as a shipping order.

"Mr. Payne. They don't distinguish it, your honor. They call them duplicate originals. I offer these in evidence.

"The Court: Well, let them make their objection.

"Mr. Diggs: We object as being incompetent, irrelevant and immaterial, and hearsay as to this defendant; on the further ground that the cars described here are not shown to have been received by the railroad mentioned, or to be gasoline or to have been transported in interstate commerce.

"Mr. Payne: Your honor, this is the beginning, we will follow that up.

"The Court: Very well, let them be introduced in evidence, and let the record show it as read.

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"Q. Mr. Anderson, I understood you once in your direct examination to say the substance in these cars, in answer to Mr. Payne's question, was blended; I understood you to say in answer to a question by the court that they consisted alone of the product of your compression plant. What is the fact in that regard?

"A. Sometimes we did ship straight run stuff and other times we shipped blended stuff, that is, blended with naphtha.

"Q. Was the substance in these cars blended or unblended?

"A. That was blended—well, one of them I couldn't say, the liquefied, I suppose, was straight run stuff.

"Q. You suppose that the car in the shipping order described as liquefied petroleum gas was the native product of your compression plant, but the other one is blended. Do you know the proportions of the blend?

"A. No, sir, not exactly. We had to regulate that according to the gravity of the gasoline." (S. M., pp. 294-306, 314, 314A.)

XVII. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 24 and 25, and admitting the testimony of the witness McCarroll, respecting the practice of Crosby & Gillespie, for the same reasons stated with

respect to the evidence of the witness Anderson last mentioned; said testimony being as follows:

"Q. State your full name, Mr. McCarroll?

"A. Charles B. McCarroll.

"Q. Where do you live? A. Kiefer.

"Q. What is your business?

"A. Assistant Superintendent for Crosbie and Gillespie.

"Q. What sort of business is Crosbie and Gillespie in? A. Well, compression gasoline plant.

"Q. A compression gasoline plant? A. Yes, sir.

"Q. State as briefly as you can what your processes of manufacture are beginning with the gas?

"By Mr. Diggs: To which we object as incompetent, irrelevant and immaterial and hearsay evidence as to this defendant; it cannot be bound by the act or proceedings of others.

"By the Court: What is the object of this evidence?

"By Mr. Payne: There are five discriminate counts from Jenks and five from Kiefer.

"By the Court: Their plant at Kiefer?

"By Mr. Payne: Yes, sir.

"By the Court: The objection is overruled.

"By Mr. Diggs: We save our exceptions.

"Q. Describe briefly your process of manufacture first beginning with the well?

"By the Court: Get your shipping order.

"By Mr. Payne: This witness did not make out the shipping orders, we have another witness for that.

"By the Court: Let him stand aside and get that witness in here. Let's have some systematic process.

"By Mr. Payne: I first thought I would show it was produced and then it was shipped.

"By the Court: Go ahead.

"Q. Go ahead McCarroll?

"A. It was taken out of the well through a vacuum process, delivered to the plant and we put it through two stages, low stage and high stage, take the gasoline out and we blend into naphtha take about a third blended to certain gravity, deliver into tank cars and we are through with it.

"By the Court: You get the casinghead gas from the well, and pipe it to your plant?"

"A. Yes, sir.

"The Court: And then you carry it through the compression process?"

"A. Yes, sir.

"By the Court: Then blend that product with the naphtha.

"A. Yes, sir.

"By the Court: Go ahead.

"Q. During the period from January 1, 1918, to June 1, 1918, did you manufacture some compression gasoline from the Texas Company?"

"By Mr. Diggs: To which we object as being incompetent, irrelevant and immaterial, not binding upon this defendant.

"By the Court: Overruled.

"By Mr. Diggs: Exception.

"By the Court: It looks to me like you could shorten this if you asked if he shipped any of this product to the Texas Company.

"By Mr. Payne: Your honor I want to show he sold it to the Texas Company at Kiefer and the Texas Company shipped it.

"By the Court: Very well.

"A. You want me to give the amount?"

"Q. No, just state whether you shipped anything during that period? A. Yes, sir.

"Q. Whether you manufactured some compression gasoline for the Texas gasoline during that period and sold it to the Texas Company? A. Yes, sir.

"Q. Do you recall the terms?"

"By the Court: Let me find out about that. Where did you deliver it to the Texas Company?"

"A. On the tank car on our siding.

"Q. On your siding at Kiefer? A. Yes, sir.

"By the Court: What is the allegation in your indictment?"

"By Mr. Payne: The allegation is as I remember the Texas Company as consignor and the Texas Company as consignee shipped from Kiefer to Port Arthur, that they were actually shipped by the Texas Company.

"By the Court: Let's see what is states. We

are losing lots of time, you ought to know what the necessary allegations in the indictment are. Just read it to him—read what the allegation is—just let me have it.

“Q. That throughout the last mentioned period the Texas Company (beginning at page 5 your honor).

“By the Court: Go ahead.

“Q. And under your contract you delivered it to the Texas Company in the cars at Kiefer, that correct?

“A. Yes, sir.

“By Mr. Diggs: To which we object, incompetent, irrelevant and immaterial and not binding on this defendant and the contract that this witness had with the Texas Company being the best evidence of the contract.

“By the Court: Well I will strike out everything about the contract. I will let him prove this commodity was the kind and description that he delivered certain cars to the Texas Company.

“By Mr. Payne: At Kiefer?

“By the Court: Yes, at Kiefer.

“Q. McCarroll, you stated that this casinghead gasoline was blended with naphtha, was it not?

“The Court: How many cars of that kind?

“A. In that length of time?

“The Court: During that period.

“A. I couldn't answer that just exactly. We delivered about forty-five to fifty a month.

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“Q. Where did you get the naphtha with which you blended these shipments, that was delivered to the Texas Company at Kiefer?

“Mr. Diggs: To which we object as incompetent, irrelevant and immaterial, and not binding on this defendant.

“The Court: Objection overruled and exception saved.

“Mr. Diggs: We save our exceptions.

“A. From the Texas Company at West Tulsa.

“Q. Where? A. West Tulsa.” (S. M., pp. 316-320.)

“Q. I show you two papers marked Government's exhibits 24 and 25 and will ask you if you identify these documents as made out by you?

"A. They were made out according to my instructions.

"Q. Under your supervision?

"A. Yes, sir, I could not say I made them out personally.

"Q. State what the papers are, please, sir.

"A. They cover shipments—

"By Mr. Diggs: We object incompetent, irrelevant and immaterial and not the best evidence.

"By the Court: I overrule the objection.

"By Mr. Diggs: I except.

"By the Court: State what they are but not the contents.

"A. Shipping orders of bills of lading covering movement of cars from Kiefer, Oklahoma, to Port Arthur, Texas.

"By the Court: They are the best evidence as to what they are.

"By Mr. Payne: I offer these in evidence.

"By Mr. Diggs: We object, incompetent, irrelevant and immaterial, no connection of the defendants being shown this being transaction with different parties with whom the plaintiff has not shown to have any connection and undertaking to bind it by acts of third parties.

"By the Court: The objection is overruled.

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"Q. Do you know that during the period from January 1, 1918, to June 30, 1918, that the Texas Company bought from Crosbie and Gillespie at Kiefer all of the output from their plant at Kiefer? A. I do.

"Mr. Diggs: To which we object as being incompetent, irrelevant and immaterial and a transaction between third parties with whom this defendant is not connected or identified.

"The Court: That is admitted only for the identification of these cars.

"Mr. Payne: That is all.

"Mr. Diggs: That is all.

"Witness excused.

"The Court: I will let you recall Mr. McCarroll. I will let you ask that question. I was under the impression that the evidence showed. But I will let you ask the question if all the cars loaded, wheth-

er or not it was the product blended with the naphtha. You may recall him and ask him that.

"Whereupon CHARLES MCCARBOLL was recalled for further direct examination by the Government:

"Mr. Payne: I did not catch the significance of your honor's statement.

"The Court: I remember the question I asked him, if all the product described made by that plant was turned over to the Texas Company and he said yes, but he described the product, casinghead gas extracted by compression and he described the blended article so there might be some confusion, so now you can repeat the question that I did not permit you to ask him.

*Examination by Mr. Payne.*

"Q. Are you the same Charles McCarroll who testified a few moments ago? A. Yes, sir.

"Q. Did you receive from the Texas Company at Kiefer cars of naphtha shipped to Kiefer from the Texas Company at West Tulsa? A. Yes, sir.

"Q. And what did you do with that naphtha?

"Mr. Diggs: To which we object as being irrelevant, incompetent and immaterial.

"The Court: Objection is overruled.

"Mr. Diggs: I except.

"A. I used it to blend with.

"Q. In what proportion did you blend the casinghead gasoline?

"A. About a third, used about one-third naphtha, different—

"Q. Do you know what the specifications for the product you sold to the Texas Company were?

"A. I cannot answer it." (S. M. pp. 326, 327, 329-331.)

XVIII. In admitting the testimony of the witness, Haigh, respecting the practice of the Ajax Gasoline Company concerning its shipments, for the reasons stated secondly above respecting the practice of the Totem Gasoline Company; said testimony being as follows:

"Q. What is the name of the casinghead gasoline plant of which you are superintendent?

"A. The Ajax Gasoline plant.

"Q. Located at Jenks? A. Yes, sir.

"Q. How long have you been connected with that institution?

"A. I have been superintendent for about twenty months.

"Q. You have been superintendent for about twenty months and how long have you been with that institution?

"A. Little over three years.

"Q. Have you been with any other casinghead gasoline plant prior to that time? A. No, sir.

"Q. What were your duties and position when you first went with the Ajax? A. Chief engineer.

"Q. Did that have anything to do with the manufacture of the product from casinghead gasoline plants?

"A. Yes, sir.

"Q. Well it was merely the mechanical work of running your engine, was it or did you have something else to do with the manufacturing of the materials?

"A. I had charge of the plant operation entirely.

"Q. You had charge entirely of the operation or cars? A. No, the entire operation of the plant.

"Q. Are you familiar with the methods used in compression plants—is yours a compression plant?

"A. Yes, sir.

"Q. Are you familiar with the method by which the product is manufactured and produced at the casinghead plant? A. Yes, sir.

"Q. What is the name of the commodity which you produce? A. Gasoline.

"By Mr. Diggs: If the court please we move to exclude the answer of the witness on the ground it is not shown he possesses this expert knowledge necessary to state the name and character of the article produced.

"By Mr. Chambers: I cannot conceive of a more competent man to determine the product than the man who produces himself and has familiarized himself with the product and made it before it is produced as an expert, I mean.

"By Mr. Diggs: In order to save time and save my record on this character of evidence of witnesses on this subject if it may be agreed the defendant has the right to strike it out after the close of the Government's case if it is not relevant and material I will wait until then and save a whole lot of time in putting in exceptions to the different questions.

"By the Court: Very well.

"Q. How long have you been producing this material from the compression plant, Mr. Haigh?

"A. Ever since the plant was built three years ago.

"Q. Did you ship your product from the casinghead plant? A. Yes, sir.

"Q. And prior to the shipping of the commodity——

"By the Court: Let me see, just wait. What sort of a plant is that, a compression?

"A. A compression plant, casinghead.

"By the Court: Casinghead gas?

"A. Yes, sir.

"By the Court: And you get that from the gas pumped from the wells?

"A. Gas comes off the oil wells.

"By the Court: And then you compress it?

"A. Yes, sir.

"By the Court: And what do you say now when you compress it, what do you call it, what do you call the commodity after it is compressed.

"A. Gasoline after it condensed.

"By the Court: What do you mean by condensed?

"A. Run through a set of cooling coils and condensed into a liquid form.

"By the Court: Q. That is a part of the process of compression?

"Mr. Chambers: That is a part of the process they have all testified to.

"The Court: Well, I am asking him.

"Q. That is a process of compressing, the condensing of it? A. Yes, sir.

"Q. Then you say, after you get it through the compression, you call it gasoline? A. Yes, sir.

"Q. Suppose you were to combine one-third naptha and two-thirds of the commodity after it was compressed, what would you call it then? A. Gasoline.

"Q. Just the same name you would before?

"A. Yes, sir.

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"Q. Now, do you produce, prior to shipping the gasoline, which you take from the compressor plant, do you prepare that for shipment in any other way excepting by blending? A. No, sir, not at our plant.

"Q. You don't weather it at your plant?

"A. No, sir, it is not necessary.

"Q. Now, how many gasoline plants are there at Jenks of this character? A. I don't know.

"Q. Well, you know some of the plants there, don't you? A. Yes, sir.

"Q. Well, can you name some of them? A. Yes, sir.

"Q. I wish that you would give all that you know of and that you remember.

"A. Well, there is the Totem, John Tell, Kelly, Swanson & Black; Texas Company; Tribes Gasoline Company and the Oklahoma Petroleum & Gasoline Company; Oil States Gasoline Company; Gypsy.

"Q. Would you say that Jenks is quite a place for the manufacture of this commodity in the manner in which you manufacture it?

"Mr. Swacker: I would like to object to that; not shown the witness is qualified; quite a place is a very indefinite term.

"The Court: How many casinghead plants are there?

"A. I don't know.

"The Court: Well, about how many, as many as ten?

"A. I think so.

"The Court: Well, you know whether there is ten or not don't you?

"Mr. Chambers: Give your best judgment.

"A. Yes, my judgment is that there is at least ten.

"Q. Now, then, these plants that manufacture this commodity that you call gasoline, do they manufacture that by the compression method? A. Yes, sir.

"Q. Are you familiar—you are familiar with the manner in which various plants manufacture their gasoline? A. No, sir.

"The Court: How many plants are you familiar with, as to how they manufacture?

"A. I am familiar with all that our own company owns.

"The Court: How many do they own?

"A. Five.

"Mr. Chambers: This is going to be a leading question, and don't answer it.

"Q. You have tried to inform yourself with the manner in which the other plants operate, haven't you, and the character of the plant, as to whether they manufacture this gasoline by compression the same as you do?

"A. Yes, sir.

"Q. And you have informed yourself with reference to that matter, haven't you?

"A. I know that all of them operate on the compression system there.

"Q. Well, the compression system, they may use different machineries, but the system and the plant and the method is exactly the same, and has to be, don't it?

"A. Not necessarily.

"Q. I mean in the compression plant.

"The Court: In principle?

"A. In principle, it is the same.

"Q. In principle, the compression plant of all of them is the same? It is the same method of getting out the gasoline from the casinghead gas, ain't it? A. Yes, sir.

"Q. Now, then, you ship your commodities, you say, after you blend it? A. Yes, sir.

"Q. I will ask you to state, how long have you been shipping it? A. Billing it, you mean?

"Q. Yes, billing it out. A. Since August, 1918.

"Q. And I will ask you to state the designated name by which you bill out your commodity?

"Mr. Diggs: I suppose this would still fall under that objection—

"The Court: Yes.

"A. We bill it as liquefied petroleum gas.

"Q. As liquefied petroleum gas. Under what condition?

"Mr. Diggs: Now, we move to exclude the statement of facts contained in that and immaterial under the issues in this case.

"The Court: Yes. I don't think that is competent.

"Mr. Chambers: You mean as to the manner in which he bills it out?

"The Court: How could that affect it?

\* \* \* \* \*

"The Court: Go ahead. I will let it in subject to be moved to be stricken out.

"Q. How did you bill your commodity?

"A. Liquefied petroleum gas.

"Q. Was it billed as liquefied petroleum gas where the pressure was below the ten pounds vapor pressure?

"A. No, sir.

"Q. When you blend the commodity that you get

from your plant with the naptha, that is what you blend it with, ain't it? A. Yes, sir.

"Q. When you blend it with that, doesn't it bring it down below the ten pound vapor pressure? A. No, sir.

"Q. Well, it does occasionally bring it down?

"Mr. Diggs: Your honor, I think counsel should be required to keep within the rule and not suggest the very answer.

"The Court: Yes, I think that. Don't lead the witness.

"Q. What is the effect of blending your gasoline that you take out of your compression pipe with the naptha, with reference to the vapor tension? A. It lowers it.

"Q. Is it your purpose—or, what is your purpose with reference to blending it? That is, as to whether or making it subject to be shipped?

"A. Yes, sir, simply for market.

"Q. Putting it upon the market? A. Yes sir.

"Q. Now, if it is above the ten pound vapor pressure, you designate it in your shipping order liquefied petroleum gas? Do you ever ship any where the vapor pressure is less than ten pounds?

"A. We have. We haven't any at present.

"Q. And how did you designate that?

"A. Gasoline.

"Q. For what reason did you designate this commodity liquefied petroleum gas when you shipped it and it was above the ten pound vapor pressure?

"A. By order of the Bureau of Explosives.

"Mr. Chambers: That is all.

*"Cross Examination by Mr. Diggs.*

"Q. Did you say your name was Haigh? A. Yes, sir.

"Q. Mr. Haigh, is it a part of your business, as superintendent of the plants you have named, to attend to the shipping of your product? A. Yes, sir.

"Q. In shipping that product, it is your purpose to bill and describe it by the name which you consider it should be billed under the tariffs established by the Interstate Commerce Commission, is it?

"A. I bill as ordered by our sales office.

"Q. What?

"A. I bill as I am ordered to by our sales office.

"Q. Then, if you bill it as ordered by your sales office, you don't bill this product because you consider it to be gasoline or liquefied petroleum gas, but because you receive orders from your superiors so to bill it?

"A. Primarily, yes, sir.

"Q. You say that you know this product to be gasoline and can you tell me the constituent elements of the product known on the market generally as gasoline?

"A. No, sir.

"Q. Can you tell me the constituent elements of the product you produce from your plant which you say is gasoline? A. No, sir.

"Q. Can you tell me the particulars in which the product produced by you resembles or has in common with the article 'generally purchased on the market as gasoline'?

"A. It has practically the same burning and explosive qualities, the gravity and vapor tensions are the same as the other articles.

"Q. The products produced by you you think has the same gravity as the gasoline you buy on the market do you? A. After it is blended.

"Q. After it is blended. How much do you blend?

"A. 56 to 58.

"Q. Now as a matter of fact before you blend this article you call it raw gasoline don't you? A. Yes, sir.

"Q. After you blend it you call it naphtha blend, don't you?

"A. We have always designated it as gasoline.

"Q. You have always designated it in your plants as gasoline. And the product that you shipped as liquefied petroleum gas is the same article you call gasoline except one has a blend in it and the other has not. Is that true?

"A. I can't say.

"Q. You can't say. I understood you to say you had charge of the shipping. A. Yes, sir.

"Q. And it is your duty also to see to the production of this article? A. Yes, sir.

"Q. And how it gets on the market. In that connection are you familiar with the rules provided by the Corporation Commission as to how the product produced by your plant shall be sold and when it shall be called and treated as gasoline and when and how it shall be called and considered unrefined naphtha?

\* \* \* \* \*

"Q. Mr. Haigh, what is the gravity of the raw casinghead gasoline produced by you?

"A. It varies from 80 to 84.

"Q. Varies from 80 to 84. To what gravity do you reduce it before shipping? A. Above 56 and below 58.

"Q. When your raw casinghead gasoline is produced and the gravity is between 80 and 84, did you say?

"A. Yes, sir.

"Q. Between 80 and 84, is that commodity in shape to be generally used in the market as gasoline? A. No, sir.

"Q. It is not. All the part of your gasoline that you ship and sell in Kansas City is shipped to refineries, is it?

"A. No, sir.

"Q. It is not. All the raw that you ship is shipped to refineries? A. It has been in the past.

"Q. I say, all you have shipped was shipped to refineries? A. Yes, sir.

• • • • •

"Q. Was there a rate on unrefined naphtha between the shipping point to which you shipped your blended gasoline from and to the points to which they were shipped?

"A. I do not know.

"Q. On unrefined naphtha?

"The Court: He said he did not know.

"A. I don't know.

• • • • •

"Q. And your only purpose in designating, you only designated the name under which this product is shipped in the bills of lading by the direction of your superior?

"A. Yes, sir.

• • • • •

"By the Court: Mr. Haigh what did you say was the gravity of raw casinghead gasoline after you had blended it for shipping?

"A. Between 56 and 58.

"Q. When you had reduced that raw casinghead gasoline as you call it to 56 or 58 gravity the article you would ship north then would only have from five to ten per cent or a little more than that of casinghead gasoline in it wouldn't it? A. It would be more than that.

"Q. You think so? A. I know that.

"By Mr. Diggs: Alright.

• • • • •

"Q. Mr. Haigh after you have produced your raw gas with gasoline by blending to 56 to 58 gravity how much of your original raw casinghead gasoline is in that mixture so prepared? A. About twenty-five per cent.

"Q. How much of that original casinghead gasoline would be in there at the time it got to market?

"A. I don't understand the question.

"Q. Can you state how much at the time this blended product gets to market are you able to state approximately, what at the time you ship it, are you able to state approximately how much of the original casinghead gasoline would be in it in your judgment?

"A. About twenty-five per cent at the time we ship it; I don't know about the arrival.

"Q. 25 per cent at the time you ship it. Alright that is all.

\* \* \* \* \*

"By the Court: What proportion do you use in blending?

"A. Well it varies to seventy-five per cent naphtha to reduce it to that gravity.

"By the Court: You would have about two of naphtha and one of casinghead gasoline?

"A. Nearly three to one." (S. M., pp. 413-420, 424-427, 430, 433-436.)

XIX. In admitting the testimony of the witness League in substance, that the commodity shipped by the Gypsy Oil Company from Kiefer before December 2, 1916, in the opinion of the witness, was of the same character as that shipped after said date; for the reason that it violated the *res inter alios acta* rule, and further that said witness was not qualified to give opinion evidence.

Said testimony being as follows:

"Q. Prior to December 2, 1916, did he use any other term except casinghead gasoline?

"A. Not that I ever heard.

"Q. Did Mr. Millard? A. That is all I ever heard.

"Q. Did Mr. Millard use the term casinghead gasoline prior to December 2, 1916, in his own conversations with you? A. Yes, sir.

"Q. Did he use any other terms? A. No, sir.

"Q. After December 2, 1916, did you examine the commodities that they had down there? A. Yes, sir.

"Q. Can you tell whether it was the same commodity you examined prior to December 2, 1916?

"By Mr. Swacker: Now I merely wish to object to that as being incompetent, irrelevant and immaterial on the same basis we made objection to all of that matter, outside the period of time when there was an unrefined naphtha rate in effect on the grounds

it violates the res inter alios acta rule. Just save an exception.

"By the Court: Now what time did you ask him about?

"A. I am asking him now if he had a conversation with Mr. Millard with reference to the designated name of the commodity prior to December 2, 1916, as to what it was. He said it was gasoline. Now I asked him if he called it any other name.

"By Mr. Swacker: He said casinghead gasoline.

"By the Court: I don't think he can prove conversation with Mr. Millard. I will allow you to prove the conduct of the business what they shipped and what they did. Now to prove what some man says unless he is the agent of this company I don't think you can do that.

"By Mr. Chambers: He was the superintendent.

"By the Court: Not of the Gulf Refining Company. The Gypsy is not on trial.

"By Mr. Chambers: I understood we had that connected up.

"By the Court: I don't so understand.

"By Mr. Chambers: Then that will necessitate recalling this witness.

"By Mr. Diggs: I don't like to interrupt the gentlemen but it appears in this record already that this so called casinghead gasoline was always shipped under the name of gasoline prior to—

"By the Court: They want to prove prior to that the officers Mr. Millard, the manager and superintendent stated that. I won't allow them to do that unless they show that the Gypsy was the agent of the Gulf. Now the act, that is a fact, the action of the company what they did, that is a fact.

"By Mr. Chambers: I think we have been misled. I think I have misstated it and I think—the question I asked was as to whether or not the material he investigated afterwards was of the same character of material he investigated prior to December 2, 1916. That was the question I believe.

"Q. In your opinion, was the commodity that you testified you investigated after December 2, 1916, the same commodity, the same character and same commodity investigated prior to that time? A. Yes, sir.

"The Court: I will let him prove that, but not what the officer said.

"Mr. Swacker: I make the same objection. It is irrelevant, incompetent and immaterial." (S. M., pp. 444 447.)

XX. In admitting the testimony of the witness League concerning the practice followed by Chestnut & Smith; said testimony being as follows:

"Q. Now, what other plant, tank cars of some other companies did you inspect?

"The Court: Any other plant, you testified about the plant at Kiefer, of the Gypsy Oil Company plant. Any other plant?

"A. Yes, sir. The Chestnut and Smith.

"Mr. Chambers: Have they been—

"The Court: No, sir, nothing said about it.

"Q. Did you investigate it there, those cars?

"A. Yes, sir.

"Q. Is that the same character of compression plants, same method of making casinghead gasoline that the Gypsy Company has? A. Yes, sir.

"Q. Was that a blended material? A. Yes, sir.

"Q. Do you know how that was shipped? A. Yes, sir.

"Mr. Swacker: Just a minute.

"Q. I will ask you to state what was the designated term under which that was shipped? Don't answer the question.

"Mr. Swacker: We desire to make an objection.

"The Court: You proved it was a blended material. What do you mean by a blended material?

"A. Raw casinghead gasoline blended with some other petroleum product.

"By the Court: Do you mean naphtha?

"A. Yes, sir, that is one of them.

"By the Court: I think that is too indefinite.

"Q. Do you know whether this company blended their casinghead gasoline with naphtha or not? A. Yes, sir.

"Q. Did they blend it with naphtha? A. Yes, sir.

"By the Court: Well now if he knows how they shipped that which was blended with naphtha, I will permit him to state the practice of shipping that.

"Q. Answer the question.

"By Mr. Swacker: Now we object as being incompetent, irrelevant and immaterial. In the first place the circumstances not being shown to be similar or identical to admit evidence with regard to that.

"By the Court: Wherein are they not similar. I am confining the question to the blended material where it is from the combination of the product resulting from a compression of the casinghead gas with the naphtha.

"By Mr. Diggs: If the court please if you will permit us to state our objection then we will take up the question of the court wherein the similarity exists.

"By Mr. Swacker: I will take that question up for a moment. The similarity or lack of dissimilarity is insufficiently shown in this respect. This witness does not know nor has he attempted to state the quality of material or degrees of blending or quantities used in blending, whether the result in blending is anything like the same stuff shipped by the Gypsy and in the second place he is not attempting to confine it to points where there were unrefined naphtha rates in effect.

"By the Court: I will overrule you on that point. What then, what about the question of naphtha blended with the raw—what you call the raw casinghead gasoline if you know how that effect just what the product was?

"A. If I knew the quantity of naphtha in each blend.

"By the Court: What would the quantity of naphtha in each blend would that depend on the character of what the blended article was?

"By Mr. Swacker: Would that determine what the blended article was?

"By Mr. Chambers: That is for shipping purposes.

"By the Court: Well what the commercial name would be.

"A. That would not affect the name.

"By the Court: That would not affect the commercial name?

"A. No, sir.

"By Mr. Swacker: Now I object to his answer on that as part of the evidence offered on the ground that he has not been qualified as to what were the commercial names of this product.

"By the Court: I should think he should know, he is a man that it is an inspector.

"By Mr. Swacker: Well, he doesn't inspect for the purpose of sale. He inspects for the physical characteristics.

"By the Court: Now when you make your inspection and make your report do you designate the name of the product that is in there that you inspect?

"A. Yes, sir.

"By the Court: Where do you get that name from?

"A. We know that that is a gasoline plant before we go there, they make nothing else.

"By the Court: Here is the point I want to know; is whether or not you solely make the designation of the name from your information or whether you get that from the different plants you talk to around or the trade, how do you determine the name you will give the product you have inspected.

"A. I use the name that is known generally.

"By the Court: How do you ascertain the name that is known generally, for instance they, you go down there and you find this commodity. Here is raw casinghead gasoline, gasoline which has compressed and you find some naphtha in there. Where do you get the information by which you designate the name that you are going to mark that car; how do you get the information to designate the name of that car?

"A. By the name it is known by among the men around the plant, for instance, or among shippers of that commodity.

"By the Court: How long have you been at this business?

"A. Since March 1, 1916.

"By the Court: What was your business prior to that?

"A. Assistant train master, P. & P. U. Railroad Company.

"By the Court: I believe I will let him answer the question, state your exceptions.

"By Mr. Green: May I make one suggestion to the court? We take the position that it is immaterial first, even though it might be known as gasoline generally yet if the court determines from the evidence we introduce here that it is further refined at Port

XXI. In admitting the testimony of the witness League respecting the practice of D. W. Franchot; said testimony being as follows:

"Q. Now do you know D. W. Franchot? A. Yes, sir.

"Q. Are they are Kiefer? A. Yes, sir.

"Q. What do they do?

"A. Make casinghead gasoline.

"Q. And do they blend and ship it? A. Yes, sir.

"Q. And have you up to the time during the time that you have been inspector in Oklahoma, have you examined and inspected those tank cars? A. Yes, sir.

"Q. Have you examined and inspected the blended, where they blended with naphtha? A. Yes, sir.

"Q. Where the naphtha is blended with casinghead gasoline? A. Yes, sir.

"Q. And how do they ship their product? As gasoline? A. Yes, sir.

"By Mr. Swacker: Same objection and exception.

"By the Court: Same objection and exception."  
(S.M. pp. 470, 471.)

XXII. In admitting the testimony of the witness League respecting the practice of D. W. Franchot; said testimony being as follows:

"Q. Now let me ask you did these people ship this product as gasoline after December 2, 1916?

"By Mr. Diggs: To which we object, incompetent, irrelevant and immaterial, the transaction being between third persons, and having no connection with the Gulf Refining Company and not shown to have been brought to the knowledge of the Gulf Refining Company and not being the best evidence of how they shipped and under what condition it was shipped.

"By the Court: Well now if you are going to go on that of course that will force them to send down there and get their railroad records. Now you have your point on the law. That allows you your exception. I will sustain the objection and require them to send after them.

"By Mr. Diggs: If the court please I am not putting the words 'the best' in there, strike out the word best and I will say hearsay.

"By the Court: Very well.

"Q. Now after December 2, 1916, you inspected that plant? A. Yes, sir.

"Q. Of the Franchot? A. Yes, sir.

"Q. And were they shipping this commodity as gasoline after December 2, 1916?

"A. They billed it that way, yes, sir.

"Q. That is what I mean? They billed it as gasoline?

"A. Yes, sir.

"By Mr. Diggs: Same objection and exception." (S. M., pp. 471, 471-A.)

XXIII. In admitting the testimony of the witness League respecting the practice of the Ajax, Tribes and Eagle plants; said testimony being as follows:

"Q You have examined the Ajax, Tribes and Eagle?

"A. Yes, sir.

"Q. Now, as to the Tribes Gasoline Company, did you make any inspection *if* it--of the manner in which it makes its commodity?

"Mr. Swacker: We will make this admission as to any of the plants that the witness may name that you contend that that is a fact, that the witness, if you ask him those questions, will testify the same, and that subject to our objection and exception.

\* \* \* \* \*

"Mr. Swacker: Have you been there and inspected them?

"A. All but the Giltland.

"Mr. Swacker: And you have inspected them likewise under the same circumstances?

"A. Yes, sir.

"Q. And during the time prior to December 2nd and after December 2nd, 1916, up to May 2nd, 1919, as far as the inspection—— A. Yes, sir.

"Mr. Swacker: We admit the testimony would be the same with reference to this as to the other, with the same objections.

"The Court: All right

"Mr. Green: I would like to get the court to instruct the stenographer to make the memorandum that all of the objections that were granted, reserved by the defendant to the first plant about which he testified, applied to all of these others, all of the exceptions.

"The Court: All objections and exceptions ap-

ply to every one except that it was not the best evidence.

"Mr. Green: Yes, sir." (S. M., pp. 472, 474.)

XXIV. In admitting the testimony of the witness League respecting practices of other shippers; said testimony being as follows:

"Q. Referring to the different blends of casinghead gasoline with naphtha and kerosene and other blends when it is blended with naphtha how is it usually shipped on the billing by the shipper? A. Gasoline.

"By Mr. Swacker: I objection, incompetent, irrelevant and immaterial.

"By the Court: Overruled.

"By Mr. Swacker: I except.

"Q. When it is blended with kerosene how is it usually shipped?

"By Mr. Swacker: I object to that as incompetent, irrelevant and immaterial.

"By the Court: Overruled.

"By Mr. Swacker: I except.

"A. Gasoline.

"Q. When it is blended with crude oil how is it usually shipped? A. Gasoline." (S. M., p. 512.)

XXV. In admitting the testimony of the witness League respecting what he had not seen done by other shippers; said testimony being as follows:

"Q. Have you seen the bill or shipping orders describing the shipment consisting of the blend of casinghead gasoline and naphtha to any other refinery as unrefined naphtha?

"Mr. Swacker: I object as incompetent, irrelevant and immaterial and not being shown that the tariff or classifications permitted such shipment.

"The Court: Objection overruled.

"Mr. Swacker: I except.

"A. No, sir." (S. M., pp. 515, 516.)

XXVI. In admitting the testimony of the witness League concerning the meaning of the term "raw casinghead gasoline"; said testimony being as follows:

"Q. When you spoke of raw casinghead gasoline, just what did you mean? A. Unblended.

"Q. Did you mean to intimate, by calling it raw casinghead gasoline that it was in a crude or unrefined state?

"A. No, sir.

"Mr. Swacker: I object to that as incompetent, irrelevant and immaterial. He stated the source of his knowledge of the names as one in use among the people.

"The Court: I will overrule the objection. You may have an exception.

"Mr. Swacker: I object, on the further ground, that the witness is not shown to be qualified to express any opinion as to whether anything is refined or unrefined.

"The Court: I will let him answer.

"Mr. Swacker: Exception." (S. M., pp. 516-518.)

XXVII. In admitting the testimony of the witness Scott respecting practices of other shippers; said testimony being as follows:

"By the Court: Now in this business have you been brought into contact so as to know the terms they use when they sell this commodity and the names they call it by?

"A. Only the names under which they ship it.

"Q. Now then in these various places that you have stated to the court in all of these places they ship casinghead gasoline blended with naphtha?

"A. Naphtha and kerosene.

"Q. Naphtha and kerosene? A. Yes, sir.

\* \* \* \* \*

"Q. Does the performance of your duties bring you into contact with the people that manufacture casinghead gasoline? A. Yes, sir.

"Q. Do you have occasion to go through their plants and see the methods by which they manufacture these products? A. Yes, sir.

"Q. Do you talk with them with reference to what is the name of the product which they manufacture.

"A. Yes, sir.

"Q. I will ask you to state what is the designated term by which they refer to this particular commodity and these various blends.

"By Mr. Swacker: I object, irrelevant and immaterial and there is no connection shown in what respect they refer to it. If they are referring to it in connection with his functions that of course is limited to the safe transportation regulations.

"By the Court: In what way would you be talking to them?

"A. When they give it a name and call it?

"By the Court: Yes.

"A. I am required to find out the pressure they use as to low and high stage, whether it is blended or unblended, whether it is steamed, temperature of the steam, whether the plant provided with appliances, storage facilities, storage capacity, and—

"By the Court: And it is in that capacity you come in contact with them and talk with them?

"A. Yes, sir.

"By the Court: I will let him testify.

"Q. Now what do they call it? A. Gasoline.

"Q. Was this the name they called it prior to December 2, 1916, and after December 2, 1916.

"By Mr. Swacker: I object to that as incompetent, irrelevant and immaterial.

"By the Court: Very well he may answer. It was the same product?

"A. Yes, sir." (S. M., pp. 532-534.)

XXVIII. In admitting the testimony of the witness Barnhart respecting the practice of his company; said testimony being as follows:

"Q. And do you ship the commodity that you manufacture and the casinghead gasoline before it is blended, or do you then blend it with other products?

"A. We don't blend.

"Mr. Diggs: To which we object, as incompetent, irrelevant and immaterial and hearsay, as against this defendant, and I don't want to keep making these objections. Subject to the motion to strike out.

"The Court: Yes, go ahead.

"Q. You say you don't blend it?

"A. I don't. I weather it.

"Q. You weather it? A. Yes, sir.

"Q. Do you ship it before you weather it? A. No.

"Q. You don't ship it where it is above the ten pound vapor? A. No.

"Q. You weather it? A. Yes, sir.

"Q. And then you ship it? A. Yes, sir.

\* \* \* \* \*

"Q. Now, how do you designate—what name do you ship it under when you ship it? A. Gasoline.

"Q. Do you sell it to the people up in Wisconsin?

"A. Yes, sir.

"Q. You sell it to them?

"A. Yes, sir; the company does; they give me orders.

"Q. And they sell it on orders from the company up there? A. Yes, sir.

"Q. And do you take the gravity of this commodity after it has been weathered? A. Yes, sir.

"Q. And what would you say was the general—generally speaking, what is the gravity?

"A. Well, anyways from seventy to seventy-five; it ain't all the same.

"Q. From seventy to seventy-five gravity?

"A. Yes, sir." (S. M., pp. 536, 537.)

"Q. Is the article you shipped to Wisconsin as gasoline there is there any other term or name under which you could ship it to the point you did ship it to of your own knowledge? A. There ain't any that I know of.

"Q. That is the only name you know of under which that particular product of the company can be shipped to the point you shipped? A. Yes, sir.

"By the Court: Did you ever investigate to see?

"A. Well no, I did not.

"By the Court: That is proving your negative without laying the foundation.

"By Mr. Diggs: I am proving more to show his knowledge bearing on his knowledge of the facts, that is all.

\* \* \* \* \*

"By the Court: Now as to the rates to these different points this expert can go out and make a memorandum of that and return into court and read it into the record showing the fact each side ought to agree to that. They are entitled to have it in here the way this rate is here to these points and then we can see if it is gasoline or unrefined naphtha and they should go on and say which it is and the expert ought to get it up and you ought to be able to agree to that.

"By Mr. Gann: There seems to be an impression in this trial the shipper cannot name the commodity any name except the name designated in the tariff and rules and it has always been the custom for the shipper to designate whatever commodity it is and the duty of the railroad company to apply that tariff to the commodity so designated.

"Mr. Swacker: Your honor has suggested to us that we would have to produce proof concerning the rate.

"The Court: Now, to my mind, a man who is not a rate man says he don't know. That wouldn't prove anything. They ought to allow this Interstate Commerce rate man to say what it is and put it in the record.

"Mr. Swacker: Our contention was that the only way it would have been competent evidence would be if they had laid a foundation by showing that there was a choice of rates. Your honor puts it up to us to show all the rates.

"The Court: You have your exceptions." (S. M., pp. 539-541.)

XXIX. In admitting the testimony of the witness Otey and the statement of Government's counsel respecting the contents of the document excluded by the court as inadmissible; said testimony being as follows:

"Q. Referring to an item on the second page of this exhibit, reading 'Painters naphtha, tank 838, car 2187, order number', will you state what that indicates?

"Mr. Swacker: Now, I would like to make an objection to this method of examination. The court has ruled that paper is not proper evidence, and the prosecuting officer is simply reading items from it, incorporating them into the question, which is exactly the same as if the paper was put in evidence.

"The Court: He can show him that and ask him what that means.

"Mr. Swacker: He is reading the contents of the paper into the record.

"The Court: I will permit him to do that.

"Mr. Swacker: Exception.

"Q. What does that order number there indicate to you?

"A. Why, no more than every tank car that naphtha had an order number." (S. M., pp. 549-550.)

XXX. In admitting the testimony of the witness Otey in substance, that certain cars contained painters' naphtha; said testimony being as follows:

"Q. Where did you get the order number shown on this sheet of April 11, order number 11348, showing painters naphtha as in cars 2187 and the three following?

"Mr. Swacker: I beg to object to that same statement over and over again, 'showing painters naphtha in' certain cars, and so forth.

"The Court: I will overrule the objection. You may have your exception. Go ahead.

"A. What is that again?

"Q. How do you know what the order number was?

"A. From the car slips." (S. M., p. 555.)

XXXI. In admitting the evidence while the witness Sanderson was on the stand respecting the practice of the Gypsy Oil Company before and after December 2, 1916; said evidence being as follows:

"Q. That is you know they were producing the casinghead gasoline at the plant, you know they were receiving a material from the South that they blended with that and you know they shipped that out?

"A. Yes, sir, that would be my memory of it.

"Q. And do you know where they shipped it?

"A. No, I could not say definitely, I did not look after that.

"Q. Do you know the designated term, the name under which they shipped it?

"By Mr. Swacker: We would just like to make the same objection we have made all along on that point as incompetent, irrelevant and immaterial.

"By the Court: Very well you may reserve the same right to strike out the evidence as the other.

"By Mr. Swacker: Exception.

(Question read by the Reporter.)

"A. As I remember it was gasoline.

"Q. Now this is in December, 1913, and you were there during the year 1914? A. 1914.

"Q. You were there during the year of 1915?

"A. Yes, sir.

"Q. And how much longer were you there?

"A. Kiefer?

"Q. Yes. A. To September, 1916.

"Q. To September, 1916? A. Yes, sir.

"Q. Do you know that this same process that you have explained was carried on by them during that entire period? A. Yes.

"Q. I mean by that, that the gasoline was produced there at the plant, that they received the material from the south, blended it with the material there, and then shipped it again to Port Arthur, and they called it gasoline? A. That was the general procedure, yes, sir.

"Mr. Swacker: Our objections and exceptions will apply to these last few questions, also?

"The Court: Yes.

"Mr. Chambers: That is all.

"The Court: Now, it seems to me that this is a duplication of what was admitted yesterday. I understood they admitted that was the practice before and afterwards. They saved their right to strike it out on the ground of being irrelevant and incompetent. That is an admitted fact. That is an admitted fact for the purpose of this case, subject to their objection and exception, on the ground of irrelevancy and incompetency.

"Mr. Chambers: Do I understand that these facts that this witness has testified to are admitted?

"The Court: They have admitted it by other witnesses, the same thing, it comes as an admitted fact for the purpose of this case.

"Mr. Chambers: The only reason this witness was put on was because, as I remember the testimony and the admission, I may be mistaken, they went from the month of May, 1916, up to the present time, and didn't go back of the month of May, 1916. And that was the purpose of putting on this witness, was to show that this transaction had continued during the entire period from the construction of the plant.

"Mr. Swacker: We make a further admission to cover all that. I don't think this particular point has been admitted. We make a complete statement of what we admit subject to our objection. We admit from the inception, in the inception, at the plant in 1913, up until about the end of 1914 or 1915, the practice was to ship naphtha from Port Arthur to Kiefer, and there blended and shipped it, not back to Port

Arthur or Fort Worth, but shipped it to northern points, shipped it to market, shipped the blended to northern points to market, and described it as gasoline.

"Mr. Chambers: Also shipped it to Port Arthur?"

"Mr. Swacker: Not at that time, and if you have any grounds——

"Mr. Chambers: I took the testimony of this witness.

"Mr. Swacker: He said he could not speak with accuracy.

"The Court: What is your best recollection?"

"A. I would say we did ship some, that is my best recollection. However, it is a matter of record and could be very easily secured and I did not bill it out and did not know where it went.

"The Court: It is your best recollection some of that commodity was shipped to Port Arthur?"

"A. That is my best recollection.

"Mr. Swacker: I will not extend the admission to that, but continuing the admission from where I left off, that is, up to the year 1914, and the early part of 1915, the material was shipped to northern destinations, such as St. Paul and Minneapolis, and even Canada, and billed as gasoline; that beginning in the early part of 1915, shipments to northern markets described as gasoline, were discontinued altogether, with the exception of shipments to the Shady Side plant at Pittsburgh, which continued throughout the time up to the present, in fact, to be made and described as gasoline, and the balance of the material was all from hence forward shipped to Fort Worth, described as gasoline, to the Ft. Worth refinery, and thereafter starting in 1915, continuing up to December, 1916, all of it except that going to Pittsburgh was shipped to Port Arthur refinery, billed and described as gasoline; that following December 2, 1916, shipments were made of the blended commodity from Kiefer only to Port Arthur, and described as unrefined naphtha and to Shady Side, Pittsburgh, to the Company, the Gulf Company's plant, and described as gasoline in the billing. That is all, of course, subject to our objection and our exception.

"By Mr. Swacker: Does that cover the entire field?"

"By Mr. Chambers: We accept that admission but we are still depending upon this witnesses testimony.

"By the Court: I will not permit you to cover any evidence covered by the admission.

"By Mr. Chambers: I say we are still standing on this witnesses testimony and we accept their admission.

"By Mr. Diggs: If the court please we move to strike from the record that portion of this witnesses testimony which he says it is his best recollection at the time that this product was shipped in 1913 and 1914 back to Port Arthur, because he says—he shows it was not his business to ship and he had no connection with the shipping and no means of knowing.

"By the Court: On what do you base your recollection. First where did you get your information—what were your duties there?

"A. I was loading the cars out and taking the gravity test of it as I remember, after that time we did ship to Port Arthur and I don't remember just where we stopped.

"By the Court: Now in taking the gravity test and loading the cars did you have occasion to see the shipping orders and bills of lading and things like that?

"A. No, that wasn't part of my business.

"By the Court: Did it come under your observation in the discharge of your duties, either directly or indirectly?

"A. Well they may have come under my observation, yes I have seen lots of bills of lading but I couldn't tell you when we stopped shipping north and went back to shipping to Port Arthur, as I say that is a matter of record.

"Q. Have you got those records?

"A. The records are here.

"By the Court: I will let you withdraw this witness and confer with the other side and get the record. Whatever they show, that is better. Of course that is one way of proving a man's best recollection, but it is not a definite recollection. That don't have strong probative effect. If objection is made on the ground it was not the best evidence I will sustain that.

"By Mr. Swacker: Very well we make that now.

"By the Court: I sustain it.

"By Mr. Swacker: We will also admit——

"By Mr. Chambers: I don't know.

"By Mr. Swacker: You only have Kiefer, you haven't touched Drumright and Jenks.

"By Mr. Chambers: How do you know we want that?

"By the Court: Very well. Do you all want to cross examine the witness now?

"By Mr. Swacker: Yes, sir.

"By the Court: I struck the evidence out I don't suppose there is anything to cross examine on.

"By Mr. Swacker: I was going to cross examine him on the grade of the blend. I have not stated that the blend was the same degree of blend.

"By the Court: Did they ask him about the blend?

"By Mr. Swacker: They asked him if it was blended. It isn't established as to whether it was the same character of blend at all that was shipped. That is the blend in 1914 was of the same character of blend that we shipped subsequently. We don't concede it was the same in this admission." (S.M. pp. 564-570.)

XXXII. In admitting the evidence while the witness Hogland was on the stand respecting shipments by the Gypsy Oil Company from Kiefer, Oklahoma, to Shady Side, Pennsylvania; said evidence being as follows:

"By Mr. Chambers: The purpose of this witness is to show the materials shipped from Kiefer was shipped north and south the same as here and from the same tank.

"By Mr. Swacker: We will admit that.

"By Mr. Chambers: One shipment north and the other shipment south? Will you admit during this period that there was a commodity manufactured at Kiefer shipped out of the same tank at Kiefer, one car loaded, designated as gasoline, designated Shady Side, Pennsylvania, and the other designated unrefined naphtha to Port Arthur?

"By Mr. Swacker: We do.

"By Mr. Chambers: At the same time.

"By Mr. Swacker: Yes, sir. Our previous ad-

mission was it was the same material and if it makes it stronger we will say it is out of the same tank at the same time and this not as strong as the other.

"By Mr. Chambers: We have the other admission in. That is all with this witness.

"By Mr. Swacker: Of course this is admitted subject to our objection to the admissibility of the evidence that it is incompetent.

"By the Court: Yes." (S.M. pp. 580, 581.)

XXXIII. In admitting the testimony of the witness Koontz respecting the character of material upon which the doctor test was made, the evidence not showing the witness to be qualified to say: said testimony being as follows:

"The Court: Now, what doctor test did you make, on what commodities?

"Mr. Swacker: I object to his attempting to testify to any particular commodities, as being unqualified.

"The Court: If he knows, he may tell. Do you know what commodities you make a test on, and you may testify, and you can have you exception. Go ahead.

"A. We made the doctor test when specified.

"The Court: Well, propound the question to him.

"Q. Specified by whom? A. The man in charge.

"The Court: Who was usually in charge, what did they call him?

"A. The man over me?

"The Court: Yes.

"A. Chief chemist; the man in charge of the laboratory, in other words.

"The Court: Well, have you got any specific instances you want to ask about? Go ahead.

"Q. Now, isn't it a fact that the doctor test was made rather seldom, on gasoline and naphtha?

"Mr. Swacker: I object to that. It is not shown the witness is qualified to know what gasoline and naphtha are.

"The Court: If he knows, he may answer, and you may have your exception.

"Mr. Swacker: Now, is it not shown he is qual-

ified in the course of business. May I cross the witness just a minute on this?

"By the Court: If he knows the physical fact I will let you cross examine afterwards and strike it out if it is not competent and relevant.

"By Mr. Payne: Answer the question.

"By the Witness: State the question, please.

"Q. Whether the doctors tests were usually made on gasoline and naptha?

"By the Court: If you know.

"By Mr. Swacker: We object on the grounds stated.

"By the Court: You have your objection and exception.

"By Mr. Swacker: Exception.

"A. I don't know that it was usually made on all stuff. I was only on for eight hours a day.

"By the Court: What did you make it on then, if you know when you were on duty.

"A. Made it on shipments of gasoline going out under specified order when necessary.

"Q. What was the purpose of this doctor test?

"By the Court: If you know.

"By Mr. Swacker: I object to that.

"By the Court: If you know, you say on specified orders when necessary. Now when was it necessary?

"A. When we got the orders." (S.M. pp. 586-588.)

XXXIV. In admitting the evidence while the witness Koontz was on the stand, respecting instructions to laboratory boys to designate the commodity formerly called "Kiefer gasoline" as "unrefined naptha"; said evidence being as follows:

"Q. Is it a fact that instructions were received by you in the laboratory that the oil that had been previously designated as Kiefer gasoline should thereafter be designated as unrefined gasoline?

"The Court: And if so, when?

"A. I cannot remember the date.

"The Court: About when?

"A. I could not say.

"The Court: What year?

"A. I could not say that.

"Mr. Swacker: If any importance is sought to be attached to that--I don't know what the facts are, but we will concede what the government is seeking to prove, that in substance instructions were issued to the laboratory boys to call this unrefined naphtha from the time that the practice to call it unrefined naphtha on the shipping arose. I don't know what the facts are in that respect, but we will concede that; but we deny the relevancy of it, and of course we object to the admissibility of it.

"The Court: Very well.

"Mr. Payne: That is all." (S.M. p 593.)

XXI. In admitting the testimony of the witness, Otey, in substance, that he copied the words "painter's naphtha" from a car slip, said car slip not being in evidence.

XXXVI. In admitting in evidence and permitting to be read and shown to the jury Exhibits Numbers 77, 78 and 66, which exhibits the evidence of Government's witnesses showed to be lead pencil records of the physical characteristics developed by laboratory tests of material received at Port Arthur, which it had been the custom of the testers to designate previous to December 2, 1916, generally as "Kiefer gasoline," sometimes as "Kiefer gas," and sometimes "Kiefer," and thereafter as "unrefined naphtha," the words, "gasoline," and "gas," having been erased from the *entires* formerly reading "Kiefer gasoline," or "Kiefer gas." Because: (a) said entries do not constitute an admission, nor tend to establish any fact, that the material in question was gasoline, the evidence of Government's witnesses showing that it was not the duty, nor within the scope of the employment, of the parties making such entries to classify or describe the material, but that their sole function was to record the physical characteristics developed by the test; (b) the erasures were not admissible for the purpose for which they were offered, of establishing intent at the time when they were admitted, the *corpus delicti* not having been established at such time; and not shown to have been made by, at the instance of, or with the knowledge or consent of any agent of defendant, the scope of whose authority embraced matters affecting freight charges.

XXXVII. In admitting in evidence and permitting to be read and shown to the jury Exhibits Numbers 80, 81, 82, 83 and 84, said exhibits consisting in, 80, a bound file of monthly statements kept at the Port Arthur plant showing car numbers and gallonage of shipments received at Port Arthur from Kiefer, bearing heading unrefined naphtha after May, 1917, and without heading previous thereto; Exhibits 82 and 84 being statements from the files of the general office of defendant at Pittsburgh, Pennsylvania, with Exhibits 81 and 83, the latter being letters of transmittal, showing the same date for the months of April and May, 1917, such statements bearing the heading "Kiefer gasoline," the Government contending that headings had been cut off the Port Arthur statement, Exhibit 80, for purposes of concealment; there being no evidence that headings had been cut off Exhibit 80, nor, if there had in fact been such cut off, why or when it was done: Such evidence not being competent to prove that the material denominated "Kiefer gasoline" was gasoline, and not being admissible at the time for the purpose for which offered, of establishing intent, the *corpus delicti* not having been established at such time; and not shown to have been made by, at the instance of, or with the knowledge or consent of any agent of defendant, the scope of whose authority embraced matters affecting freight charges.

XXXVIII. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 85, 90, 91 and 92, being telegrams exchanged between C. B. Ellis and R. R. Mitchell and W. M. Powers in January, 1914, in relation to rates on gasoline between Kiefer and Port Arthur.

XXXIX. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 86 and 87, being letters exchanged between C. B. Ellis and W. M. Powers in May and June, 1916, in relation to rates on gasoline.

XL. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 88 and 89, being letters exchanged between C. B. Ellis and J. R. Christian and F. G. Reilly in February and March, 1915, respecting rates on naphtha from Port Arthur to Kiefer, and rates on gasoline from Kiefer to Port Arthur.

XXI. In admitting in evidence and permitting to be read to the jury Exhibit No. 93, being a letter from J. R. Christian and F. G. Reilly to C. B. Ellis dated January 15, 1915, in relation to the rate on naphtha from Port Arthur to Kiefer.

XLII. In admitting in evidence and permitting to be read to the jury Exhibit No. 94, and admitting the testimony of the witness Timmons in relation thereto.

XLIII. In admitting in evidence and permitting to be read to the jury Exhibit No. 95, and admitting the evidence in relation thereto, showing in substance that during the years 1913 and 1914, at the inception of shipment from the plant at Kiefer, shipments were made and sold commercially of a product described as "blended gasoline."

XLIV. In admitting the testimony of the witness Millard in substance, that prior to December 2, 1916, the Gypsy Oil Company billed shipments as gasoline.

XLV. In admitting the testimony of the witness Millard respecting commercial shipments; said testimony being as follows:

"Q. Mr. Millard, you referred to some gasoline that was marketed direct from Kiefer and shipped from Kiefer to customers did you not? A. Yes, sir.

"Q. How was that billed? A. I believe as gasoline.

"Q. State the difference between that product shipped direct and the product shipped to Port Arthur?

"A. At that time?

"Q. Yes.

"A. The only difference was in the gravity.

"Q. What was the difference?

"A. That I could not tell. The different customers call for different gravities in their orders, and the product was made to meet those orders.

"Q. Now, is it a fact that the gasoline which you shipped direct to the customers, and sold on the market as gasoline, is it a fact that the only difference between that and what you ship to Port Arthur, was that the gasoline marketed direct was blended with more naphtha?

"A. I do not remember the exact amount of naphtha it was blended with. The only difference was in the gravity.

"Q. How could you control the gravity?

"A. By blending.

"Q. Well, now, suppose, for example, that you had a seventy gravity casinghead gasoline, and wanted to produce a sixty gravity gasoline for the purpose of being marketed direct, how would you accomplish that result?"

"A. By using naphtha.

"Q. By blending the casinghead with naphtha?"

"A. Yes sir.

"Q. Now, suppose you wanted to get the gravity to say fifty-eight, instead of sixty; how would you accomplish that? A. Use more naphtha.

"Q. Add a little more naphtha? A. Yes, sir.

"Q. Now, was there anything else done to the gasoline that was sold direct besides blending it with naphtha?"

"A. No, sir.

"Mr. Swacker: We would like an objection and an exception to all this testimony, on the ground of irrelevancy and immateriality. I just did not want to interrupt him.

"The Court: Very well. You may have your exception to it." (S.M. pp. 700-702.)

XLVI. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 100, 101, and 102, being records of distillation tests between March 31, 1917, and February 1, 1918.

XLVII. In admitting in evidence and permitting to be read to the jury Exhibit No. 120, being a statement compiled by the witness Otey of car numbers and gallons.

XLVIII. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 110 to 119, inclusive, being records of distillation tests from October 14, 1916, to December 3, 1918.

XLIX. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 68 and 69, being letters dated June 2, 1914, and December 29, 1915, respectively, from C. B. Ellis, Traffic Manager of the Gulf Refining Company, to W. P. Donovan, Superintendent of the Gypsy Oil Company, giving directions concerning the routing of shipments from the Gypsy Oil Company to the Gulf Refining Company; said letters in no wise tending to establish that said Ellis was connected with the Gypsy Oil Company, for which purpose they were admitted.

L. In admitting the testimony of the witness Freeman concerning the character of plant operated and material shipped by the Carter Oil Company from Cartereo, as follows:

"Q. What kind of a plant has your company at Cartereo, or rather what kind of a plant did you have in the year 1916, from May on?

"Mr. Diggs: If the court please, can I make the same reservation I did before? I do not want to make objection each time. We don't object to these specifically, but want the right to move to strike hereafter.

"The Court: All right.

"A. A skimming plant." (S.M. p. 807.)

LI. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 135, 136, 137 and 138, being telegrams and letters from C. B. Ellis to W. P. Donovan.

LII. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 120 to 134, inclusive, consisting of pump house records from November 7, 1916, to May, 1918.

LIII. In admitting in evidence and permitting to be read to the jury Exhibits Numbers 10 to 14, inclusive, being unloading records.

LIV. In admitting in evidence and permitting to be read to the jury Exhibit No. 139, being General Order No. 1 of the Director General of Railroads, offered as establishing the adoption by said Director General of Railroads of existing tariffs on file December 29, 1917.

LV. In admitting the testimony of the witness Moss respecting an alleged test and the material used therefor; said testimony being as follows:

"Q. What is the company you are with?

"A. Brady, Swanson & Calley.

"Q. Did you sell some gasoline to a party that came to your plant the night before last about half past nine?

"A. I did not sell any.

"Q. Did the Bureau Inspector and myself and Mr. Gann?

"A. I did not sell any.

"Mr. Swacker: I object, as being irrelevant, incompetent and immaterial.

"The Court: The objection is overruled.

"The Court: Well, did you furnish it to him?

"A. Yes, sir.

"The Court: When was that?

"Mr. Payne: Night before last.

"Q. What kind of gasoline was that?

"The Court: Describe what the commodity was.

"Q. Describe what the commodity was.

"Mr. Swacker: Your honor understands this is no part of the test made jointly.

"The Court: Very well. I am going to let this evidence in of this independent test, and I will let your evidence in of your independent test, stand before the jury.

"A. It was just raw casinghead gas.

*By Mr. Payne.*

"Q. Did you take the gravity of it? A. No, sir.

"Q. Did you see it done? A. Yes.

"Q. What was the gravity? A. I—

"Mr. Swacker: We would like to have the privilege of cross examining the witness on the manner of producing before showing what was accomplished in the test. It is a different class of material—if it is a different class of material, we say it is irrelevant.

*By Mr. Payne.*

"Q. Did you put that gasoline in the automobile?

"A. Yes, sir.

"Q. What make of automobile was it, did you notice?

"A. I never noticed.

"The Court: Hold on. I will let them have the privilege of laying the predicate for their objection.

*Mr. Swacker.*

"Q. Mr. Moss, what character of plant did you operate. What character of casinghead plant did you operate?

"A. High and low stage.

*The Court.*

"Q. Compression or absorption plant?

"A. Compression.

*By Mr. Swacker.*

"Q. Did you have expanders on your plant?

"A. No, sir.

"Q. Do you know what kind of plant the Gypsy has, whether that has expanders on it or not? A. I do not.

"Mr. Swacker: We suggest there is no proper foundation laid to take this testimony in evidence.

"The Court: I will permit it, with the understanding that you are to introduce what the difference is between compression plant with expanders and without expanders.

"Mr. Payne: Allow me to do that?

"The Court: Yes, if you don't do that, I will strike this evidence out. It was admitted yesterday that that didn't make any difference. I will permit it only on the understanding that evidence will be introduced to support that contention and if it is not I will strike it out.

"Mr. Swacker: Yes, sir, I think, of course, before additional evidence is offered, that should be established because it is a necessary predicate.

"The Court: Very well, it is within the power of the court to regulate the evidence. If it is not connected up I will instruct the jury not to consider it.

"Q. What did you state was the gravity of the gasoline? A. Eighty-five.

"Q. Did you see the tank of the automobile drained of the gasoline it already had in it? A. I did.

"Q. And you put the 85 gravity raw gasoline right into the tank? A. Yes, sir.

"Q. And did you see them drive away in the car?

"A. I did.

"Mr. Payne: That is all.

*Cross Examination by Mr. Swacker.*

"Q. Mr. Morris, did you examine the performance by the parties there handling that car to see whether they drained the car completely of the gasoline theretofore in it?

"A. It was drained out of the tank in the rear.

"Q. Well, do you know whether they drained out the reserve tank? A. I do not.

"Q. Then you don't know but that the gasoline in the reserve tank is what propelled the car away, is that correct? A. I do not.

"Q. Do you know whether they drained the gasoline from the carburetor? A. I do not.

"Q. Do you know whether they drained the gasoline from the carburetor? A. I don't know.

"Q. Did you see them drain the gasoline from the carburetor or did you not? A. I did not see them do it.

"Q. Do you know what an expander is, on a compression plant? A. No, sir." (S. M., pp. 1152-1155.)

LVI. In admitting the testimony of the witness Downing respecting his using casinghead gasoline from the Crosby & Gillespie plant to propel his car; said testimony being as follows:

"Q. What is your business?

"A. Casinghead gasoline business.

"Q. How long have you been in that business, Mr. Downing? A. Eight years in Oklahoma.

"Q. How long altogether? A. Ten years.

"Q. What is the material, what product do you produce out there?

"Mr. Swacker: I object; incompetent, irrelevant and immaterial; no showing here that there is any connection with this witness and the transaction involved here.

"The Court: Now, he asked how long he had been in the refinery business.

"Mr. Payne: In the casinghead gasoline business.

"The Court: Whereabouts have you been in business?

"A. Kiefer, Oklahoma.

"Mr. Payne: What is the name of the plant?

"A. Crosby & Gillespie.

"Q. Have you ever used casinghead gasoline in an automobile?

"Mr. Swacker: We object, as being irrelevant, incompetent and immaterial, and no showing what character of casinghead—

"The Court: He can show—

"Mr. Payne: Show first he used it, and then what is the gravity.

"Q. What kind of a plant do you operate?

"Mr. Swacker: We will be here from now until next June, the Government can call 20 or 30 witnesses to state they did, and we can call fifty or a hundred witnesses to state they did not, it is a collateral issue, and—

"The Court: You brought it on yourself.

"Mr. Swacker: Of this particular material——

"The Court: Not of the material shipped, I permitted you to go and show by a witness that they tested a material and it was the character of the material of the Kiefer plant. That is the way I let the evidence in. They did not know of their own knowledge that it was the materials of the Kiefer plant, but they tested it as experts, and knew the character of the material at Kiefer, and I permitted them to testify it was the same material.

"Mr. Swacker: We connected it up by proving by the witnesses who furnished it to them.

"The Court: You showed, though, it was subsequent to this date.

"Mr. Swacker: We have also shown and it is undisputed that one plant will continue to produce the same character of material at a later date that it produced at a previous date, but it is a wholly different proposition.

"The Court: I ruled on that; I will let them see what this is. You are manager of the Cosden plant. How long have you been manager of it? Let's get the predicate.

"A. Seven years, ever since it was built.

"Q. What kind of a plant is it? A. Compression.

"The Court: Are you acquainted with the Gypsy plant there?

"A. Yes, sir.

"The Court: What difference, if any, is there in the make-up of the Crosby & Gillespie plant and the Gypsy plant at Kiefer?

"A. Well, no, I couldn't say, I am not acquainted in that way that I can say. I have never been through the Gypsy plant.

"The Court: Well, is your plant an absorption or compression plant?

"A. Compression.

"The Court: Go ahead.

"Q. Are there expanders in your plant? A. Yes, sir.

"Q. State, Mr. Topping, whether you have used the casinghead gasoline in an automobile?

"Mr. Swacker: To which we object as incompetent.

"The Court: From that plant. From that plant, from that Crosby & Gillespie plant, which is a compression plant? What does it compress?

"A. Gas.

"The Court: Casinghead gas?

"A. Yes, sir.

"The Court: And by compression, converts it into what is known as casinghead gasoline.

"A. Yes, sir.

"The Court: You use the expansion method?

"A. Yes, sir, expansion for cooling.

"The Court: This character of casinghead gasoline that you say you used in cars, where did you get it from?

"Mr. Swacker: He hasn't said he used it. They asked him. You asked a question in which you implied that he said he had used it. He hasn't answered the question.

"The Court: I think the record shows that. Did you use it in a car?

"A. Yes, sir.

"Mr. Swacker: To which we object.

"The Court: I want to see the condition.

"Mr. Swacker: Yes, but we want our exception.

"The Court: I will give you a chance to make your objection and consider it made in time.

"The Court: Go ahead, answer the question, you know how to lay the predicate.

"Mr. Payne: That is what I have been trying to do.

"Q. Did you use the gasoline from that plant?

"The Court: I insist that is not—where did you get the gasoline you say you used in the car?

"A. From Crosby and Gillespie plant.

"The Court: When?

"A. Ever since I built the plant for six years.

"The Court: Go ahead.

"Mr. Payne: That is all.

"The Court: You mean you made it a practice of using casinghead gasoline to operate your car for that six years?

"A. Yes, sir, may have sometimes bought some other gasoline when I was not there.

"The Court: Did you use anything else besides this casinghead gasoline to run your car?

"A. Yes, sir.

"Mr. Swacker: We ask this evidence be stricken out as being irrelevant, incompetent and immaterial and not being shown it is the same character of material at all and the conditions are not shown, surrounding the manufacture, surrounding the particular material used by the witness.

"The Court: I will let the record show that they shipped this very stuff—who does the evidence show they shipped it to.

"Mr. Payne: The Texas Company at Port Arthur, at their plant.

"The Court: Do you know the specific gravity; the range of the specific gravity of this commodity you are talking about here, do you know the maximum and the minimum of it?

"A. I do not.

"The Court: The way I get it from you is that you have run that plant for the past six years, and that plant is used exclusively for abstracting casinghead gasoline from the gas by the compression method?

"A. Yes, sir.

"The Court: You did expand it and make it a practice to use that commodity in running your car?

"A. Yes, sir.

"The Court: Very well, I will let it stand over your objection and give you an exception.

"Mr. Swacker: Yes.

"The Court: I merely asked these question- to get the—

"Mr. Swacker: We object now, with the development, it is specifically shown here it is not the same material he stated in response to the court he didn't know what the gravity was.

"The Court: I admit he shows that practice during the year, and it is for the jury to say what the weight is, to say that during that time it is the highest or lowest gravity. I don't know whether this evidences on this test are admissible until it is unfolded and I hear the arguments on both sides as to

the law. I haven't made up my mind as to its evidentiary weight.

"Mr. Swacker: Give me an exception.

"The Court: Yes." (S.M., pp. 1115A-1161.)

LVII. In admitting the testimony of the witness Dykema respecting the conduct and results of an alleged test of material presumed to have been casinghead gasoline, whereas the evidence showed that the witness did not know and had not examined to ascertain whether the reserve tank or carburetor of the car used, had been drained of real gasoline or not; said testimony being as follows:

"Mr. Payne: Mr. Dykema, did you, in connection with a number of the Bureau of Explosive inspectors, and others, make a trip to Jenks night before last?

"A. I did.

"Q. Will you—

"The Court: Do you know this man Moss who testified here you saw him—

"A. I saw him, sir.

"The Court: Will you state what you want to do, Mr. Payne?

"Mr. Payne: What occurred at Jenks.

"Mr. Swacker: To which we object as incompetent, irrelevant and immaterial.

"The Court: Well, if you get what place you are at I will admit it. Jenks is a very indefinite proposition.

"Q. State what occurred in the plant of the Brady, Swanson & Calley people.

"The Court: If anything did occur.

"Mr. Swacker: To which we object, incompetent, irrelevant and immaterial, having nothing to do with this defendant or the Gypsy Oil Company.

"The Court: Overrule the objection.

"Mr. Swacker: We except.

"A. We went to the plant—

"The Court: Is that the plant where Mr. Moss was?

"A. Yes, sir.

"The Court: Go ahead.

"A. We drained our gasoline tank thoroughly.

"The Court: What do you mean by thoroughly?

"A. We drained the tank which connected, of all, as far as the carburetor, and as far as we could determine, there was no gasoline left.

"The Court: Did you drain the reserve tank?

"A. I don't know if there was a reserve tank on the car or not.

"The Court: Did you look to see, did you clean the carburetor and clean that?

"A. The carburetor drains back to the tank automatically if you open the bottom of the tank.

"The Court: Did you examine to see?

"A. We examined the tank and the gasoline did come out of the hole in the bottom of it.

"Mr. Swacker: May I cross examine him on that?

"The Court: Yes.

*By Mr. Swacker.*

"Q. You say you understand; did you examine to see whether it was in fact drained or look at the carburetor at all? A. We did not.

*By Mr. Payne.*

"Q. To the best of your knowledge and belief, was the car entirely drained of the gasoline that was in it?

"Mr. Swacker: I object, being irrelevant, incompetent and immaterial.

"The Court: Yes, I sustain the objection.

"Q. Go ahead and state what occurred.

"Mr. Swacker: I object, as being irrelevant, incompetent and immaterial.

"The Court: You will have to show there was no gasoline in the car or the carburetor was cleaned, before I will admit the evidence.

"Mr. Payne: We can show even if there had been any in the car left, it would have been used up very quickly.

"The Court: You must do that and lay the predicate before I admit the evidence.

"Q. Mr. Dykema—

"Mr. Payne: They presume something—

"The Court: You can lay the hypothetical question, lay the predicate for the hypothetical question,

prove your predicate. I have ruled and you must follow what the court says, and we will get through.

"Q. State whether or not—what kind of a car was it?

"A. It was a Packard car.

"Q. State whether the running of a Packard car from Jenks to Tulsa would use up all of the gasoline which might have remained in the car had there been a reserve tank, and had there been any gasoline left in the carburetor?

"Mr. Swacker: I object to that as incompetent.

"The Court: I am going to let them prove this, but I will state now, I don't think the weight of this evidence amounts to much.

"Mr. Swacker: Your honor observed the witness says he don't know how much the reserve tank might contain.

"The Court: If you are going to make a test, you must take all manner of precaution to make the test.

"Q. State whether or not, in your opinion, that would use up all the gasoline. A. It would.

"Mr. Swacker: We have an exception.

"The Court: I will let the circumstances go to the jury.

"Q. State what kind of gasoline was put into that car after it was drained of gasoline that was already in it.

"Mr. Swacker: I object to that question, particularly as to the form, because it is already testified by the witness that he don't know whether it was completely drained.

"The Court: That is for the jury. What the attorney says don't make evidence. The jury understands what was done.

"The Witness: Repeat the question, please.

"Q. As to what kind of gasoline was put in the car after it was drained?

"A. The product of the compression of natural gas.

"Q. What was the gravity of it?

"A. It was 85 gravity.

"Q. 85 gravity. Did you take the gravity of it at the plant? A. I did.

"Q. What was the vapor tension of that gasoline?

"A. The vapor tension, as we determined it, was seventeen and one-half pounds.

"Q. Seventeen and one-half pounds.

"Mr. Swacker: I don't want to be insistent, but may it be considered that we have an objection to each question and answer, and the court overrules the objection and we save an exception?"

"Q. After you filled the car with this 85 gravity gasoline—did it start the motor?"

"A. It did start the motor repeatedly.

"Q. Was there any trouble in starting the motor?"

"A. There was none.

"Q. State how far the car ran on that gasoline.

"A. It ran——

"Q. Well, where did it run to?"

"A. Ran back to Tulsa, ten miles, I understand it is about twelve miles.

"Q. Did the car stall at all on the way back?"

"A. No, sir.

"Q. Was there any trouble in the running of the car?"

"A. None that I could determine.

"Q. Was the road hilly or level? A. Quite hilly.

"Q. What was the condition of the road near the Brady, Swanson & Calley plant?"

"A. The road near the plant there was new and very sandy and rutted deeply.

"Q. About what speed did the car make on the way back? A. We made as high as 35 miles an hour.

"Q. Was there any adjustment made on the carburetor, on the car?"

"A. None that couldn't be made on the dash.

"Q. Who drove the car, Mr. Dykema?"

"A. I do not remember the driver's name, I believe Donnelly.

"Q. Was it a hired car? A. Yes, sir.

"Q. Where was it hired?"

"A. At a stand across from the Tulsa Hotel.

"Q. Had you ever seen the car, or the driver, before?"

"A. Not to the best of my knowledge.

"Q. Had you ever been to the plant of Brady, Swanson & Kelley before? A. No, sir, had not.

"Q. Had you ever met Mr. Moss before?"

"A. No, sir.

"Q. What kind of gasoline did you ask him to give you? A. Casinghead gasoline.

"Q. Raw casinghead? A. Raw casinghead." (S.M. pp. 1178-1183.)

LVIII. In admitting the testimony of the witnesses Dykema without his being qualified to have an expert opinion,

concerning his belief as to the possibilities of operating a car with material the character of which was not definitely known; said testimony being as follows:

"Q. Mr. Dykema, state in your opinion whether a material even lighter than the material you used last night would run an automobile? A. It would.

"Mr. Swacker: I object to that as incompetent, irrelevant and immaterial.

"The Court: What was the question.

(Question read.)

"By the Court: Material of what kind?

"Mr. Payne: Of the kind that he used in the Pierce Arrow car last night.

"The Court: I believe I will permit that. Their experts have testified as to what it wouldn't do and so on. The converse is true?

"A. It would.

"Q. How light would the material have to get before it would fail to run a car?

"The Court: What material are you talking about?

"Mr. Payne: The same material, gasoline.

"The Court: The material that you had in that car?

"Mr. Payne: Yes.

"The Court: The commodity you had in that car?

"Mr. Payne: The commodity you had in that car?

"Mr. Swacker: I object as being irrelevant, incompetent and immaterial, unless the proper foundation is made, showing the witness has tried and demonstrated and found what point materials will not run the car.

"The Court: He testified he is an expert and has had experience in casinghead gas and things like that, that is *prima facie* evidence which would entitle him as an expert to testify. I will permit you to cross examine him, if you desire.

"Mr. Swacker: I except.

"The Court: I think the authorities hold the court determines whether a man is an expert.

"Mr. Swacker: Yes, sir, but the question presupposes the knowledge which one could only have by

ascertaining in a profession and it is not ascertained whether he attained that knowledge in a profession.

"The Court: I will permit him to testify.

"Q. Is as to whether material, even lighter than the material you used last night would run an automobile and——

"The Court: An ordinary automobile?

"Q. An ordinary automobile, I mean, ordinary automobile and of the point of likeness——

"The Court: Not a Ford—but I don't say that out of derision of a Ford—but a Buick or Dodge or Pierce Arrow.

"Mr. Chambers: More Fords in use than any other car and probably use more gasoline than any other car.

"The Court: I believe they testified yesterday most anything would run a Ford.

"Mr. Chambers: It makes it of commercial value then.

"The Court: Well, when you determine the name, things like that, and it is offered for the purpose that I think it should be conformed to the name of those that you have mentioned, take at least an average grade to determine it, I will confine it to Buicks, Dodges, and Pierce Arrows or Chandlers, cars of that character.

"Q. Yes, any other standard than a Ford?

"A. I believe any liquid made from natural gas by compression will run an automobile." (S.M. pp. 1188-1190.)

LIX. In admitting the testimony of the witness Dykema not shown to be qualified as possessing knowledge of the character testified to; said testimony being as follows:

"Q. Is it not a fact that the product from the compression of natural gas is what is universally known as gasoline?

"Mr Swacker: I object to this as involving—he supposes that the witness has universal knowledge.

"Mr. Payne: He has.

"The Court: I will let him answer the question, whether it is commonly known, not universally known.

"Mr. Swacker: I think he should be limited in it——

*By Mr. Payne.*

"Q. Is it commonly known as gasoline?"

"The Court: You can bring out what he means by commonly known.

"Mr. Swacker: Exception, please.

"Q. Is that liquid commonly known as gasoline?"

"A. It is.

"Q. In the trade? A. Yes, sir.

"Q. In the scientific world? A. Yes, sir." (S.M. p. 1206.)

LX. In admitting the evidence of the witness Debar concerning having used casinghead gasoline to propel a car, it not being shown that the material was of the same character as that produced by the Gypsy Oil Company; said evidence being as follows:

"Q. Wouldn't casinghead gasoline run a motor car?"

"Mr. Swacker: I object; incompetent, irrelevant and immaterial; doesn't show the particular kind of casinghead gasoline involved.

"Q. Have you used casinghead gasoline in any car?"

"A. Yes.

"Q. When and where?"

"A. During the investigation of the natural gas situation for preparation before the Corporation Commission I drove a Paige car——

"Mr. Swacker: I object to further testimony, unless it is shown what material came from these plants, and that it is identical.

"The Court: Let's see, and then I will be able to rule on it.

"A. I ran a Paige seven-passenger sedan a great number of miles.

*The Court.*

"Q. What sort of casinghead gasoline did you use?"

"A. I will get to that, your honor. I will describe that.

"The Court: Yes.

"A. A part of the time on casinghead compression gasoline and absorption plant, both combined; and in another case, on certain compression casinghead gasoline. At an investigation for the North American Refinery, held at Cushing, I believe three years ago this summer, from some certain compression plants I drove a Ford car

several hundred miles on compression gasoline. Also one of the Cushing plants. And I drove a Dodge roadster with compression casinghead gasoline quite a time, some week or two, in that distance, with nothing but casinghead compression gasoline.

"Mr. Swacker: I ask now that that be stricken out as incompetent, irrelevant and immaterial, not properly identified as being the same material.

"The Court: I will overrule the objection.

"Mr. Swacker: Exception please." (S. M., pp. 1285-1287.)

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In rejecting evidence offered by the defendant upon said trial, to which defendant duly excepted, in the following instances, to-wit:

LXI. In sustaining the objection of the Government to the questions asked of its witness, Waddell, on cross-examination after having testified that he had collected on defendant's shipments the rate applicable to unrefined naphtha, whereby the defendant sought to show that in the month of July, 1919, upon the witness first attempting to collect rates applicable to gasoline he was enjoined by the United States District Court, at Beaumont, on the petition of defendant; said questions, offer and ruling being as follows:

"Q. Mr. Waddell, you testified that you had collected the unrefined naphtha rate on all shipments shipped by the Gypsy Oil Company to the Gulf Refining Company at Port Arthur since December 2?

"The Court: 1916.

"Q. 1916. Is it a fact, Mr. Waddell, that you did undertake to hold out some of these cars claiming a higher rate than the unrefined naphtha rate?

"Mr. Payne. I object unless he fixes the period your honor. I covered only the period from December 2, 1916, to March 31, 1919, which was the date of the indictment, the period covered by the indictment.

"Mr. Diggs: I will state the question again.

"Q. You did undertake in the year 1919, prior to November 22, 1919, undertake to hold some of these cars on the ground that they were subject to a higher rate?

"The Court: Now, after the railroads were put into the hands of the government, I will require you

to limit that. I believe this indictment goes up to that period.

"Mr. Payne: And beyond. But, your honor, what happened in November, 1919, can have no bearing on this case as the period we cover ends with May 31, 1919, and these gentlemen on the other side have been very particular to limit us to what happened during the period of the indictment itself. It is a well established rule. We have never attempted to show as to what has happened afterwards.

"Mr. Swacker: All these subpoenas duces tecum call for more than two months after the indictment. I understood your honor to rule this morning that you would allow evidence on certain matters up to the return of the indictment but not afterwards.

"The Court: I have ruled that is true.

"By Mr. Diggs: If the court please we can thrash this matter out in a second by stating to the court what I expect to prove and then let him rule on it.

"By Mr. Payne: Subsequent to the period no matter what it is it would not be competent.

"By the Court: I will hear you state what it is.

"By Mr. Diggs: The defendant Gulf Refining Company expects to prove by this witness and now offers such proof that sometime in the month of July, I think July 26th and up to and prior to November 22, 1919, he undertook to refuse to deliver the cars described unrefined naphtha shipped by the Gypsy Oil Company from the plants of said people at Drum-right and Jenks.

"By Mr. Payne: We object to the question as leading.

"By the Court: He has got a right to ask leading questions, this is your witness.

"By Mr. Diggs: To the Gulf Refining Company at Port Arthur and was compelled to deliver said cars to the Gulf Refining Company under said rate by order of the United States District Court at Beaumont in pursuance of an order made in a case in which the Gulf Refining Company was complainant and the Railroad Companies and Walker D. Hines the Director General of the Railroads were defendants.

"By the Court: You need not answer that question. I will sustain the objection.

"By Mr. Diggs: Exception if your honor please.

"By the Court: Alright give him an exception."  
(S.M., pp. 214-215.)

LXII. In sustaining the objection of the Government and rejecting the testimony offered by the defendant on cross-examination of the Government's witness League, by which defendant sought to prove that the witness had received a ruling from the chief inspector of the Bureau for the Safe Transportation of Explosives to the effect that the description used by the Gypsy Company was not incorrect; said questions, offer and ruling being as follows:

"Q. In the course of your duties as an inspector do you know of any controversy arising between yourself and Mr. Donovan the manager of the Gypsy Oil Company over an appropriate description to be used in shipping this product? A. No, sir.

"Q. Do you know of any controversy having arisen between Mr. Donovan and the inspector named Ennis?

"By the Court: Of your own knowledge, not from hearsay?

"A. No, sir.

"Q. Do you know of a controversy between yourself and this inspector Ennis in respect to the mode of description? A. Yes.

"Q. Will you state what that controversy was?

"A. There was an exchange of ideas between—

"By Mr. Payne: I anticipate that this, your honor, is in reference to a conclusion of law and I think that Mr. Swacker should bring out the nature of the controversy first?

"By the Court: Yes, sir.

"By Mr. Swacker: My previous question indicated the nature of the controversy, a controversy as to the proper description to be used on the shipping orders.

"By Mr. Payne: I think that that is triable by the regulations themselves, not what this man or that man or the other many may think about it.

"By the Court: On what theory do you claim that is admissible.

"By Mr. Swacker: We desire to show that such a controversy arose and that it was submitted to the superior officer of both of these inspectors, who ruled

in favor of the interpretation given by the Gypsy Company, and overruled the other inspectors. Now we don't say that that is controlling in any sense of determining what the commodity is, but we do say in the light of the evidence that has already been admitted as to the custom of calling the thing that it is relevant on that score.

"By the Court: I sustain the objection.

"By Mr. Swacker: Particularly on the question of intent. We say that if there was no concealment as has been shown by the shipping order; this witness has testified that it was evidenced always by the shipping orders that the commodity was casinghead, that it certainly negatives any intent to obtain an improper rate.

"The Court: This is not the way to prove it. You want to prove by him that he or any officer of these bureaus advised that this was the proper way to bill it, I will let you prove that.

"Mr. Swacker: I was getting to that. I was asking him what the controversy was.

"The Court: No, that is not it. It don't make any difference whether they had a controversy or not, if there was any officer whose duty it was to advise them told them that was the way to bill it, I will let you prove that.

"Q. Did you ever have any instruction from Colonel Dunn, the head of the Bureau of Explosives, to any question as to how this commodity should be billed?

"The Court: No, not that, but what he told these people. It doesn't matter whether they had any instructions or not, but if they told them that was the way to bill it, I will let you show it. I mean, if any of these inspectors advised the Gypsy that that was the proper way to bill it, I will let you prove that.

"Mr. Swacker: That is not exactly what happened. What happened was this, that this inspector would not be giving instructions to the Gypsy, but he communicated to his chief, and his chief gave him instructions.

"The Court: Well, I will exclude that.

"Mr. Swacker: Exceptions, then.

"The Court: That is not a matter for the jury. That is a matter for me." (S. M., pp. 490-493.)

LXIII. In sustaining the objections of the Government to and rejecting the testimony offered by the defendant through the witness League on cross examination, by which the defendant offered to show that the fact that there was a divergence in nomenclature as between the tariffs and the safe transportation rules respecting the article known as casinghead gasoline, was known to and discussed by a meeting at which said witness was present, attended by a majority of the producers of the locality, the witness having been permitted to testify on his direct examination concerning the name used by employees of such producers as he came in contact with; said questions, offer and ruling being as follows:

"Q. Did you attend a meeting of casinghead producers in the summer of 1918 or the spring of 1918, between the casinghead producers and the Bureau of Explosives, a conference? A. On May 11, 1918.

"Q. Here in Tulsa? A. Yes, sir.

"Q. I will ask you if you can state whether there was a large meeting of casinghead producers present at that meeting? A. Yes, sir.

"Q. I will ask if it involved a large portion of the producers of casinghead in this vicinity, or a large portion of the producers in this vicinity? A. Yes, sir.

"Q. Do you recall whether Mr. Donovan, the manager of the Gypsy Gasoline plant, was at that meeting?

"A. Yes, sir.

"Q. Do you recall whether Mr. C. B. Ellis was at that meeting? A. Yes, sir.

"Q. Do you recall whether any representative of the Texas Company was at that meeting?

"A. I don't recall.

"Q. Do you recall whether Mr. Jarvis was there?

"A. I don't know.

"Q. Who was there on behalf of the bureau?

"A. Of explosives?

"Q. Yes. A. Mr. W. S. Topping, C. P. Bisel.

"Q. Who is Mr. Bisel, connected with the bureau?

"A. The chief chemist.

"Q. Was Colonel Dunn there? A. No, sir.

"Q. Can you tell me what the purpose of that meeting was?

"A. A conference with the producers of casinghead gasoline.

"Q. Well, with respect to the rules proposed to be recommended by the Bureau to the Interstate Commerce Commission? A. Yes, sir.

"Q. I will ask you if you recall a discussion of that portion of rule 1824-K you read a while ago in the first edition reading 'and is shipped as gasoline,' and in the second rule reading 'must be described as gasoline, casinghead gasoline or casinghead naphtha'?"

"Mr. Payne: I object, your honor. I don't think that is legal.

"The Court: I don't see how that would be competent.

"Mr. Swacker: They have attempted to show by this witness what was common terminology.

"The Court: No, just the practice of the companies, how they use it.

"Q. Was there any discussion in that meeting——

"Mr. Payne: We object to any discussion in the meeting. It was in reference to proposing an amended rule. Now, the amended rules themselves are the law and not what the discussion was in reference to putting it in. There may have been all kinds of opinions expressed.

"Mr. Swacker: I am not asking this witness to testify to what the law was. I am asking him to testify the subject of discussion there in so far as it had anything to do with the name of this commodity.

"The Court: I will permit you to show they discussed it but not what they said.

"Mr. Swacker: Very well.

"Q. Was there a discussion there of the name properly to be applied to this commodity? A. Yes, sir.

"Mr. Swacker: I do not want to transgress your honor's ruling in that respect, I ask this question——

"Q. Was objection made there that there was a divergence in nomenclature of this particular article as between the tariffs and the safety transportation rules——

"Mr. Payne: I object to what further transpired at the meeting unless we are going to take up the entire meeting and the government to show things favorable to its side.

"The Court: I permitted them to state what was discussed, but not what was said. That is a collateral matter and hearsay, would have to unfold before the jury everything to see the merit.

"Mr. Swacker: I think that is correct. The only thing—I only think I am entitled to it, because the

witness on direct examination went into this character of testimony as to what people called it.

"Mr. Diggs: I suggest that the only theory on which the evidence of this witness was admitted this morning was for the purpose of showing how the people in this vicinity name this article——

"The Court: No, how the trade, body of men.

"Mr. Diggs: We have shown on these—we have shown all these producers or a majority were present or together discussing the proper name to apply to this article.

"The Court: No, I will not permit that. I sustain the objection of the government.

"Mr. Swacker: I except.

"Mr. Payne: I don't object if you let the Government go into it, if you will do that.

"The Court: No, the Government cannot go into it, and I will not permit him to state what he heard and discussed—what he heard them discuss there.

"Mr. Swacker: I except." (S.M., pp. 494-497.)

LXIV. In rejecting the evidence offered by the defendant upon cross examination of the witness Powers showing the witness had established the rate on unrefined naphtha based on defendant's representation that the commodity to be shipped was a low grade article moving to Port Arthur for finishing; said questions, offer and ruling being as follows:

"Q. Did he make the explanation you have heretofore stated in relation to it?

"A. That it was a low grade article to be shipped and treated and reshipped.

"Q. Yes, sir, to Port Arthur to be further finished.

"A. I understood that was to be done, yes, sir.

"Mr. Swacker: Now, may I ask if he established a rate finally based on those representations?

"The Court: No, I will not permit you to prove that.

"Mr. Swacker: All right. That is all." (S.M., p. 719.)

LXV. In rejecting the evidence offered by defendant upon cross examination of the Government's witness Reilly, whereby defendant sought to show that the witness understood the representations of defendant concerning the material to

be shipped as being the material that was in fact shipped, and was actuated in the establishment of the rates used by such understanding; said questions, offer and ruling being as follows:

“Q. Mr. Reilly, did your knowledge and conception of the term unrefined naptha, extend to the point of knowing whether or not there was embraced within that term, naptha produced either by casinghead compression plants or by a topping plant?

“A. I don’t think we could or would take into consideration as to how it was produced.

“Q. The different methods of production?

“A. The different methods of production

“Q. Made no difference to you? A. No, sir.

“Q. It was merely a question of was the product unrefined naptha? A. Yes, sir.

“Q. And what was the main question was—the question whether it was finished or unfinished or what?

“The Court: I don’t think that is competent.

“Mr. Swacker: Bearing on the question of the representation.

“The Court: Well, the representations speak for themselves. It is in writing. The representations speak for themselves.

“Mr. Diggs: We offer it, if the court please, for the purpose of explaining the meaning that the terms used in the letters already introduced by the Government carried to the mind of this witness.

“The Court: Well, it is not what he understood. That might be if the Frisco was on trial on a criminal offense; they might show their intent, but they are not on trial here now.

“Mr. Diggs: Give us an exception.” (S.M., pp. 731, 732.)

“Q. Did the degree of the finishing or refinement enter into the question of what might be shipped on that description?

“By Mr. Payne: I object, the tariff speaks for itself.

“By the Court: The letter speaks for itself too.

“By Mr. Swacker: I except.” (S.M. p. 733.)

LXVI. In excluding, upon the objection of the Government, the evidence offered by the defendant of the statute of

the State of Texas passed in February, 1919, which statute prohibits and makes a criminal offense of the calling or designation, for purposes of sale or transportation, of material including that involved in this case either by the name of gasoline or gasoline in conjunction with any other word or words.

LXVII. In sustaining the Government's objection to and rejecting the evidence offered by the defendant through the witness Schock concerning the feasibility of determining by means of distillation curves whether a material will operate a car; said questions, offer and ruling being as follows:

"Q. Now, you were asked, was not allowed to complete your answer with relation to curves, will you explain why it is necessary for you to know what is the curve of the gasoline before you can tell whether it will run a car?

"A. Because the gasoline that will run a car must be made up of a mixture of continuous, or a mixture of substances which will give a rather continuous curve, as we call it, extending from the lowest to the highest, in order that this mixture, when it is sucked or drawn up with the air, drawn through a carburetor, may partly change to a gas, and the remainder be drawn along, a fine mist, as if we use the mixture of lubricating oils and casinghead gasoline, we could have any gravity we wish, and as we drew, used it in the car, particularly with what we might call wild gas product, as we drew air through there we would get a vapor only and a very little mist, because the lubricating oil would be too heavy to be drawn along, the vapor would be too rich, could be easily too rich because the per cent of vapor and air, the upper limit within which no explosion will occur is very low, and if that per cent is easily exceeded, on the other hand the lubricating oils, it would be drawn along——

"Mr. Payne: I object.

"The Court: Yes, I think that is.

"Mr. Swacker: He is speaking of the curves on gasoline composed of the lubricating oils, just to demonstrate that it can be seen by some of the curves that it is impossible to run a car——

"The Court: I don't understand lubricating oils to be in this case.

"Mr. Swacker: No. He is demonstrating why it is impossible to run a car on certain curves in certain instances.

"The Witness: Your honor, will you allow me to explain?

"The Court: No, I think that is going too far.

"A. Well——

*By Mr. Swacker.*

"Q. Now, then——

"Mr. Diggs: Please note our exception." (S.M. pp. 1013-1015.)

LXVIII. In sustaining the Government's objection to and excluding the testimony offered by defendant through the witness Tabor, qualified as an expert, by which the defendant sought to show that casinghead product was comprehended within the scope of the definition given; which questions, offer and ruling are as follows:

"Q. Now, what does Bacon and Hamor say?

"A. Bacon and Hamor say, Vol. 1, page 129, of the work, 'Naptha distillate' (unrefined naptha) as those fractions which boiled up to 150 degrees C under atmospheric pressure.

"Q. That is the same definition as that given by the government in their publication?

"Mr. Chambers: I object to that as asking for a conclusion of the witness.

"The Court: No that is a conclusion.

"Q. That last definition that you have just read likewise comprehended casinghead product? A. It does.

"Mr. Chambers: We object to that as asking for a conclusion of the witness.

"The Court: Yes, that is a conclusion.

"Mr. Diggs: Give us an exception." (S.M. p. 1109.)

LXIX. In sustaining the Government's objection to and refusing to admit Defendant's Exhibit Number 142 for identification, being a bill of complaint filed by the Texas Company against the Texarkana & Fort Smith Railroad Company et al., in the United States District Court, for the Southern District of Texas, wherein said Texas Company sought to recover from the carriers, upon the ground that it had been overcharged, the difference between the rates applicable to gasoline and those applicable to unrefined naptha, on the ship-

ments made by it as to which the indictment alleges said Texas Company suffered discrimination, and the Government offered proof in support of such allegation that the Texas Company had paid gasoline rates on said shipments; said petition being filed with the other exhibits in this case and marked Exhibit Number 142 for identification; and said offer and ruling being as follows:

"Mr. Diggs: Mark that Defendant's Exhibit 142.

"Mr. Diggs: Defendant offers in evidence certified copies of the bill of complaint of the Texas Company against the Texarkana and Ft. Smith Railroad Company, Walker D. Hines, Director General of Railroads, pending in the District Court of the United States for the Southern District of Texas, Texarkana Division.

"Mr. Payne: I object.

"Mr. Diggs: Seeking to recover——

"The Court: Let me see what it is.

"Mr. Diggs: I have a right to make my offer.

"The Court: Yes, but you offer it and I will see what it is.

"Mr. Diggs: I am objecting to the United States attorney jumping in here, which I submit to the court is neither courteous nor an orderly proceeding.

"The Court: Very well, both of you stop.

"Mr. Payne: And has no bearing——

"The Court: Both of you stop.

"Mr. Diggs: Does the court prohibit me from stating——

"The Court: You are offering this as a certified copy giving the style of the case and number of it and I will see what it is and then you can state your grounds.

"The Court: On what grounds do you offer it?

"Mr. Diggs: The Government introduced evidence in this case in chief, showing certain shipments of cars by this company of these railroad companies, the rates of freight paid——

"Mr. Payne: May I interrupt?

"Mr. Diggs: No.

"The Court: Let him make his statement.

"Mr. Payne: May I interrupt a second?

"The Court: No.

"Mr. Payne: Before he makes it. May I have an opportunity to explain?

"The Court: You will be given an opportunity. Proceed, Mr. Diggs.

"Mr. Diggs: Showing the freight received on the cars, as I understand the purpose of the government in offering the proof and the court admitted it was for the purpose of showing nobody else in that section of the country shipped this article by the name we did and it was unknown but that now we offer this record to show that the specific cars mentioned in that evidence, The Texas Company is now seeking to establish to be unrefined naphtha and recover the excessive rate paid; for the purpose of showing the custom of the country and recognition of the term among shippers and producers of the same commodity.

"The Court: Do you object?

"Mr. Payne: Surely we do.

"The Court: Well, do you object? No, just answer the question.

"Mr. Payne: Yes, sir.

"The Court: The objection is sustained.

"Mr. Diggs: Give us an exception." (S.M. pp. 1111-1113.)

LXX. In sustaining the Government's objection to and excluding from evidence Defendant's Exhibits Numbers 143, 144, 145, 146, 147 and 148 for identification, being a bill of complaint filed July 21, 1919, by the defendant against the Texarkana & Fort Smith Railroad and others, in the United States District Court, for the Eastern District of Texas, wherein defendant showed an attempt on the part of the carriers to assess gasoline rates instead of unrefined naphtha rates upon its shipments, and sought an injunction against such course, together with the further proceedings therein, including the injunction pendente lite issued by said court, the demurrer and answer, affidavits, orders and bond in said proceeding, all of which pleadings are filed with the exhibits herein and marked Exhibits Numbers 143 to 148, inclusive, for identification; said offer and ruling being as follows:

"Mr. Diggs: Mark these Defendant's Exhibits 143-144-145-146-147 and 148, if the court please now in offering this I want to say it was offered as a part of the cross examination of the witness in chief and at that time excluded by the court. We now offer the exhibits 143 to 148 both inclusive, being certified copies of the record in the case of the Gulf Refining Company vs. The Texarkana and Ft. Smith Railroad Company.

"The Court: Let me see that.

"Mr. Diggs: Pending in the District Court of Texas solely for the purpose, solely bearing on the motive of the defendant, that is the only purpose we claim they are admissible for, the bearing on the motive of the defendant.

"Mr. Diggs: It has been suggested to me by other counsel that the word 'motive' is not sufficient, so I offer it for the purpose of proving both motive and intent.

"Mr. Gann: The Government objects.

"The Court: On what ground?

"Mr. Gann: On the ground that it is not relevant to the issues in this case, a matter pending in another jurisdiction.

"The Court: Now, what is the last allegation in the indictment? What is the date?

"Mr. Gann: May 16, 1919.

"Mr. Diggs: None of the cars described in that are included in the indictment, I understand?

"Mr. Gann: This proceeding was instituted on July 24, 1919, after the close of the transaction charged in the indictment.

"Mr. Diggs: It is only offered for the purpose of motive and intent.

"The Court: I can understand how, if a suit was filed, that would be evidence then of the good faith where they brought a suit and set it up, but not afterwards.

"Mr. Green: Your honor, you see this was six months before the indictment was returned. We make the point in that way we could be deprived of our defense, because that occurred long before the indictment and being arbitrarily stopped, the indictment might just as well have gone on.

"Mr. Diggs: May I suggest to the court, the

article was shipped; as long as it was delivered to us, we could show no step to show honesty of intention—

“The Court: I will sustain the objection.

“Mr. Diggs: Give us an exception.

“The Court: Very well.” (S.M. pp. 1113-1115.)

LXXI. In sustaining the objection of the Government to and excluding the evidence offered by defendant, of the provisions of Section 4353 of the Revised Laws of Oklahoma concerning the character of material usable as gasoline; which offer and ruling are as follows:

“Mr. Swacker: We want to ask the court to notice, and we introduce as evidence the Oklahoma statute affecting gasoline. Section 4353 of the laws—the Revised Laws of Oklahoma, 1910.

“The Court: I will permit them to go into the record for the advice of the court, not to the jury.

“Mr. Swacker: Our theory—

“The Court: The court takes judicial knowledge—

“Mr. Swacker: You have admitted a good deal of evidence to show the use of words, and I think that is proper evidence in that class, aside from the legal effect.

“The Court: Any objection?

“Mr. Chambers: We object, incompetent, irrelevant and immaterial.

“The Court: You use the word unrefined naphtha—if you had used that word, I would let it go to the jury. I would like to know—

“Mr. Swacker: Most of the evidence has been used on the word gasoline.

“The Court: I will let the word and the term the way it is used gasoline, benzine, naphtha and other easily inflammable liquids of petroleum shall not be tested as flash tests but said fluids shall be tested as to its specific gravity.

“The Court: I will let that part go in.

“Mr. Swacker: The next succeeding part is what we want particularly.

“The Court: That does not go in. These words are not used—

"Mr. Swacker: It is descriptive of the words just preceding.

"The Court: This does not relate to anything—it might be possible that it might be admissible on cross examination of an expert where he was testifying as to specific gravity. That is the only part I will permit to go to the jury for the present. It may be it can be offered later under such shape as might be admissible.

"Mr. Swacker: We, of course, don't want merely the part that has been read without the whole.

"The Court: Very well, I will admit that much. But if you don't want it admitted without all of it, it is not incumbent on you to insist on a part, but I will not let all of it in, but I will let the part that used those terms go to the jury.

"Mr. Swacker: Then may we offer the whole? If I understand the ruling of the court, you will exclude it then?

"The Court: I will permit you to offer this much, and if you don't want any of it unless all—

"Mr. Swacker: That is correct.

"The Court: Then I exclude it. I understand the Government objects.

"Mr. Payne: Yes, sir, we object to that as not bearing on the question in issue as to whether or not this was gasoline.

"The Court: I will exclude it.

"Mr. Swacker: May we save an exception?

"The Court: Yes." (S.M. pp. 1122-1124.)

LXXII. In sustaining the objection to and rejecting the testimony sought to be elicited by the defendant from the witness Dykema on cross examination, concerning commercial products of an ordinary petroleum refinery; said questions, offer and ruling being as follows:

"Q. Now, are you able to state what are the finished commercial products of an ordinary petroleum refinery?

"Mr. Payne: I object.

"The Court: Why?

"Mr. Payne: Because the witness was limited on his examination in chief to casinghead gasoline and he was not allowed to testify in reference to refineries. This is not proper cross examination.

"The Court: I think that is correct.

"Mr. Swacker: He is testifying here as to what is or is not gasoline.

"The Court: You asked though as to what the other products of a refinery were.

"Mr. Swacker: Yes, sir, but he attempted to cover the whole range of petroleum distillation.

"The Court: You made the objection on that and I held him down to it.

"Mr. Swacker: I would like an exception.

"The Court: Very well." (S. M., p. 1251.)

LXXIII. In sustaining the Government's objection to and rejecting the testimony offered by the defendant upon cross examination of the witness Debarr showing that the State of Oklahoma, through its Corporation Commission, does not include the material shipped to defendant as gasoline with respect to taxation and inspection of gasoline; said questions, offer and ruling being as follows:

"Q. Do you know what is the fact what the Corporation Commission of Oklahoma has done with respect to ruling as to whether or not taxes should be paid on this material as gasoline, whether inspected and taxed for gasoline?

"Mr. Chambers: I object.

"The Court: You need not answer that.

"Mr. Swacker: I think it is perfectly proper to show what the use of a term as provided by law, as being construed by the Corporation Commission.

"The Court: That would involve too many issues, all that would have to be before this court. I exclude it.

"Mr. Swacker: Well, may I ask him if it is not the fact that taxes and inspection is not extended to this material, gasoline taxes and inspection?

"The Court: I will not permit that.

"Mr. Swacker: I would like an exception, please." (S. M., pp. 1290, 1291.)

LXXIV. The court erred in admitting over the objection and exception of the defendant, Government Exhibits Numbers 36 to 42, inclusive, and 45 to 56 inclusive, being copies of tariffs on file with the Interstate Commerce Commission,

insofar as said exhibits purport to show anything other than the rates on gasoline from Kiefer, Jenks and Drumright between December 2, 1916, and December 27, 1917, over the routes named in the indictment.

LXXV. That the court erred in permitting the Government's counsel to make improper statements in the presence of the jury to the effect that defendant was in a conspiracy with others to obtain concessions by misbilling; said statements being as follows:

"Mr. Payne: Here is our theory for your honor's consideration, that the Gypsy Oil Company was practically an accessory before the fact in this concession in that they misbilled the shipment.

"The Court: But you haven't got them charged with a conspiracy to violate the law.

"Mr. Payne: Part of the device whereby the Gulf Refining Company got the concession, and thereby they aided and abetted and were in a joint purpose.

"The Court: To my mind I think it is fundamental that that is not competent. If you have any authorities that deal on it I would be glad to hear you, but to my mind that is fundamentally incompetent.

"Mr. Payne: Volume Sixteen of Cyc under the subject of Evidence and Admissions and under the subject of Conspirators and persons acting together, says that where two or more persons are acting together under a common design, that the admission of one are admissions against the others.

"The Court: Well now let me see that.

"Mr. Diggs: Will the court bear with me a minute? I want to object to statements about conspiracy.

"The Court: Oh, they have a right to do that. We haven't time to take that up. You may have an exception." (S. M., p. 199.)

LXXVI. That the court erred in permitting the Government's counsel to attempt to impeach and discredit its own witness, Timmons, in the following respects:

"Q. Does it go from the steam plant into the treating plant? A. Out into the continuous treaters.

"Q. Then what happens to it next?

"A. On into the storage tanks.

"Q. Is it then ready for market? A. No, sir.

"Q. What do you do with it after that?

"A. It has got to be either blended or further refined as you might say.

"Q. Now hold on don't let's anticipate anything.

"By Mr. Swacker: I object to that he is asking the man and the man is answering him as fairly as he can.

"By the Court: Never mind, go ahead.

"Q. After it has gone through the processes you have mentioned the crude still, the steam still and the agitator, what further is done with it in the way of refining?

"A. Well it might be—just depends on what grade I am running—might be further blended.

"Q. Did you do anything else ordinarily? A. No, sir.

"Q. After it has had those three processes?

"A. No, sir.

"Q. What is the purpose of the blend which you might do?

"A. To meet the specifications transported from one oil to another tank to meet whatever specifications I am required to ship.

"Q. Can those specifications be made from the pumping of one tank to another?

"A. Sometimes, sometimes you have to agitate and sometimes blow the tank to get the sample.

"Q. You take a sample from it? A. Yes, sir.

"Q. Naturally you have to do that, to ascertain the contents of it, but aside from this blend, is there anything other that is done to it before you ship it?

"A. As it is in the tank.

"Q. Yes, sir. A. No, sir.

"The Court: Let's make haste. You are taking up lots of time.

"Q. I notice an entry, 'painters naphtha distillate', what is that?

"Mr. Swacker: I object to that.

"Mr. Payne: I will change that.

"Q. What processes are gone through to get painters naphtha? A. The same processes.

"Q. The same processes as the other. That is to say, the oil is refined in the crude stills, steam stills and agitators, and then it is put in a tank and if it meets certain specifications you call it that. What are the specifications

that enables you to determine whether it is painters naphtha? A. By the gravity and color.

"Q. So that your painters naphtha has been through all of your refining processes? A. Some of it has.

"Q. Some of it has. Well now that is a little bit different from what you testified.

"Mr. Swacker: I object to those kind of statements before the jury. He certainly made no such statements at all.

"The Court: I will let the jury determine.

"Mr. Swacker: I would like an exception. I don't think that is proper examination.

"Mr. Diggs: We now ask the court to instruct the attorney for the Government not to make remarks about the nature of the witness' answers.

"The Court: That is not a proper way to examine a witness. The way is to ask him if he didn't say so and so awhile ago. That is the proper way to examine a witness. Proceed." (S. M., pp. 258-260.)

LXXVII. The court erred in stating in the presence of the jury that defendant was making technical objections, giving the implication that the jury would in consequence be unduly detained upon the case for three months; said objections raised by defendant and said statements of the court being as follows:

"Q. You have the original duplicate?

"A. I have the original duplicate of that shipment covered by the same voucher covering the first car B-73, and there is another one there.

"Mr. Gann: I ask to have this identified as Exhibit 30 and offer the same in evidence.

"Mr. Diggs: To which we object as being irrelevant, incompetent and immaterial, and not shown to be issued by the authority of the Texarkana-Fort Smith Railroad Company or signed by any person on its behalf, merely on its face shows to be an instrument, a copy of another instrument which copy is not signed and the rubber stamp appearing on the face thereof not shown to be made by the authority of the railroad company or any of its agents or employees.

"The Court: Have you got the others—offer them together as one exhibit?

"Mr. Diggs: The court overruled my objection?

"The Court: Yes, objection overruled.

"Mr. Diggs: I except.

"Mr. Gann: I offer exhibits offered in evidence—this exhibit is offered in connection with the draft for \$22,826.87, and draft for \$9,193.10.

"Mr. Diggs: I object to the introduction of the said draft as being irrelevant, incompetent and immaterial, because it does not appear said draft has been paid or the amount thereof received by the Texarkana and Fort Smith Railroad Company or any person authorized by it.

"The Court: The objection is overruled.

"Mr. Diggs: I except.

"Q. The freight charges were paid on that car, were they? A. Yes, sir.

"Q. Take the next car, 3104, have you the original duplicate paid freight bill covering car 3104? A. Yes, sir.

"Q. And also the voucher covering that car?

"A. Yes, sir.

"Mr. Gann: I ask that the exhibits be identified. (Which exhibits were marked for identification as Government Exhibits 31 and 32.)

"The Court: Now why don't you wire and get the auditor of this company and get him here and you will get it in much quicker. If they start in on these technical objections I will keep you here three months, and adjourn this jury over. If you start in that I will do that and get it all in here.

"Mr. Diggs: I object to the court stating in the presence of the jury that they are technical objections that we ought not to make.

"The Court: I didn't say you ought not to make them." (S. M., pp. 349, 350.)

LXXVIII. The court erred in stating in the presence of the jury that he believed the defendant was going to insist on technical rules and that he gave it notice that he would require it to toe the law, and upon counsel for defendant objecting to such statements in the presence of the jury as implying that its objections were not authorized by law, although sustained by the court, the court further stated that the objections were only technical and would delay the court and take up time; said objections and statements being as follows:

"By Mr. Diggs: We object to that part of Plaintiff's Exhibit 34 appearing to be a bill or voucher to the Southwest Texas Commercial National Bank for the reason that the same is not endorsed and the J. H. Wilson, it looks like that is his name and he is not shown to be an officer of the Texas Company or is authorized to draw checks and it appears on its face to be for some department agent and not shown that it ever went through the hands of the bank nor was paid by them and I make the same objection to that part of exhibit 34 marked voucher D-522 on the same grounds. I object to that part of the exhibit, Plaintiff's Exhibit No. 34 bearing the number 584 and purporting to be a draft drawn to the order of J. N. Salter and signed by J. C. Countryman as the handwriting of J. C. Countryman has not been shown and it appears to be his signature by another person who is not shown to have any authority to sign his name to the draft nor is the said J. E. Countryman shown to be an officer of the Railroad Company or the said A. R. Bank by whose name it purports to be signed is an officer of the company or has authority to sign the same and I make the same objection to that part of Plaintiff's Exhibit 34, No. 585 being a like draft signed by the same person and for the further reason there is nothing on the face of the said papers to show they have ever been paid except the rubber stamp purporting to contain the name of the Southwest Commercial Bank said stamp not shown to have been affixed by an officer of the bank or an employee having authority to fix the name thereto.

"The Court: Where did you get this voucher?

"A. I got it from our auditor at Houston, Texas, our department agent, he is our auditor, they are in his files in Houston.

"The Court: Now this voucher here, do you know how the South Texas National Bank, are you conversant with the way they handle vouchers and how they mark them paid?

"A. I am conversant with how all banks handle them, and that is marked in the same way, in the usual way as handled by all organizations of that kind.

"Mr. Diggs: We object and ask to have the answer of the witness excluded as being incompetent, irrelevant and immaterial, and tending to show a general custom to which the defendant is not connected, and not being responsive to the question.

"The Court: Very well; objection is overruled.

"Mr. Diggs: We save our exception.

"The Court: Now tell this jury whether or not that draft has been paid.

"Mr. Diggs: To which we object as incompetent, irrelevant and immaterial, because the witness is not shown to have sufficient knowledge.

"The Court: Very well, state whether or not that draft has been paid.

"Mr. Diggs: We save our exceptions.

"A. I stated with all commercial assurance that that draft has been paid.

"Mr. Diggs: We save our exceptions.

"A. I stated with all commercial assurance that that draft has been paid.

"Mr. Diggs: We object and ask that the answer of the witness be stricken, as incompetent, irrelevant and immaterial, and in his answer he states that with all commercial assurance the draft has been paid.

"The Court: Why do you say with commercial assurance it has been paid?

"A. Because it bears evidence of having passed through the usual channels before it reaches the disbursing officer for the final files.

"Mr. Diggs: We ask that the answer of the witness be excluded on the ground it is incompetent, irrelevant and immaterial, and a conclusion of the witness, the fact on which said conclusion is founded not being stated.

"The Court: Now, I believe they are going to insist on these technical rules. I will require you to send and get those witnesses.

"Mr. Gann: I suggest all these exhibits be withdrawn and we re-enter the proof.

"The Court: Very well.

"Mr. Gann: Mr. Reporter, strike from the record all that testimony about those exhibits.

"The Court: Now I will give notice to the defense that you all had better be ready to toe the law.

"Mr. Diggs: We object to the court making the statement in the presence of the jury to counsel for the defendant which implies that they are making

objections not authorized by law, which objections the court has practically sustained.

"The Court: It might be authorized by law but they might be technical objections that only delay this court and take up time. Now we will not discuss it.

"Mr. Diggs: Give me an exception.

"The Court: Gentlemen, you will not consider what the court says when he is dealing with the lawyers in this case. That is a matter the court will take care of and the jury will not consider it in any way whatever for the present." (S. M., pp. 353-357.)

**LXXIX.** The court erred in permitting counsel for the Government to state in the presence of the jury that defendant made certain misrepresentations which he stated were contained in a letter but not there in black and white but there just the same; said letter being Exhibit Number 97; said statements and ruling being as follows:

"Mr. Payne: We have no objection to the last letter, but we contend that there were representations that the commodity that was being shipped from Kiefer to Port Arthur was the same commodity as was moving between these other points but the fact was that we can show they were entirely different.

"The Court: Get your witnesses here. That representation—where is that representation?

"Mr. Payne: It is in that letter.

"The Court: In this letter, let me see that.

"Mr. Payne: It is not in there in black and white, but it is in there just the same.

"Mr. Swacker: I desire to except to the statements of counsel for the Government, in the presence of the jury, being argumentative, concerning the construction—

"The Court: He is addressing the court.

"Mr. Swacker: I ask for an exception to the statement of counsel for the Government." (S. M., p. 728.)

**LXXX.** The court erred in denying defendant's motion to strike from the evidence and withdraw from the consideration of the jury the defendant's admission made subject to its

exception concerning shipments of the Texas Company; said admission and motion being as follows:

"By Mr. Diggs: If the court please if you will give me three or four minutes I think we can save three or four days' time in this case. If the court please as to the character of evidence the shipments of the Texas Company sought to be introduced yesterday under certain conditions we think that evidence is immaterial but as we understand the rule in order to be able to move to exclude that evidence after the close of the Government's case we must save exceptions to it as we go along or make an objection to it reserving the right to strike at the conclusion of the Government's case unless the other facts have been shown to make it relevant and material so to cover that feature of the case I have prepared an admission that we are willing to make with respect to count 36 and 81 of the indictment. (Reading) It is admitted by the defendant that the Texas Company shipped to itself at Port Arthur, Texas, over the route of the Midland Valley railroad, the Kansas City Southern and Texarkana & Fort Smith Railway upon the dates, in the cars, the quantities in each such count alleged casinghead gasoline blended about one-third naphtha described in the shipping orders as gasoline and paid the charges for the transportation thereof from Kiefer, and Jenks, Oklahoma, computed at the rates respectively, 33 cents and 39 cents per each hundred pounds and that the commodity shipped from Kiefer was produced by Crosby and Gillespie Company and that from Jenks by the Totum Gasoline Company, this admission is made subject however to the right to move to strike it and have it stricken from the record in the event the Government does not prove by additional evidence facts sufficient to make this evidence relevant and material.

"The Court: What do you say about that?

"Mr. Chambers: I don't know what he means by that last proposition.

"The Court: They admit that for the purpose of the record subject to their right to strike it out on the ground of relevancy and incompetency.

"Mr. Diggs: After the Government closes its case, if the court thinks it is relevant and material, it stands; if the court doesn't think so, it is stricken.

And I want to add to the record that the admission is made for the purposes of this trial only.

"The Court: Yes." (S. M., pp. 387-389.)

LXXXI. The court erred in denying defendant's motion to strike the record and withdraw from consideration of the jury, made upon the completion of the Government's case, and renewed at the end of the evidence, certain evidence admitted over defendant's objection; said motion and ruling being as follows:

"By Mr. Diggs: The defendant moves to strike from the record the admissions heretofore made by the defendant as to the Gulf Oil Corporation owning the stock of the Gulf Refining Company and the Gypsy Oil Company and the Gulf Pipe Line Company of Oklahoma on the ground and for the reason the Government has not made such admissions relevant and material by introducing evidence showing, or tending to show, the dominance and control of the Gulf Refining Company, the Gypsy Oil Company and the Gulf Pipe Line Company by the Gulf Oil Corporation, or that said companies are run and controlled by the same officers, or that a separate corporate existence and independence of each of said corporation is not maintained. The defendant further moves the court to strike from the record and from the consideration of the jury the evidence introduced by the Government, over the objections of the defendant, showing, or tending to show, the method of doing business by the Gypsy Oil Company at its casinghead gasoline plant and the statement of the employees of the Gypsy Oil Company as to the nature and quality of the articles produced, and the evidence showing, or tending to show, that the articles produced were, at the time referred to, as gasoline, on the ground that the same is irrelevant and immaterial in that they are shown to be the acts and declarations performed and made by third persons not under the guidance or control of this defendant; and that no such dominance or control of the Gypsy Oil Company and its employees, by this defendant, has been shown to make the acts and declarations competent evidence as admissions against this defendant; nor has it been shown said acts were performed and statements made in the presence or hearing of this defendant or any officer or agent of this defendant; or

that same were ever made to the knowledge of this defendant under such circumstances and conditions which would make such acts and statements in the presence or hearing of the agents of this company of this defendant evidence against it, and referring particularly to such statements and declarations shown in the evidence by J. H. Reidman, Walter Millard, C. E. Sweet, Frank Ralph, H. W. Morris, Joseph Manson. The defendant also moves to strike from the record all evidence that the Gypsy Oil Company shipped this product, known as casinghead gasoline, south or north before the second day of December, 1916, and shipped same under the name of gasoline, on the ground that said evidence is irrelevant and immaterial as to the guilt of this defendant; and on the further grounds that it does not appear from the evidence of the Government that the product shipped prior to December 2, 1916, was not lawfully shipped and described as provided by the tariff rules and regulations; and on the further ground that said evidence as to this defendant is hearsay; and on the further ground that said evidence cannot be competent and material against this defendant on the ground and for the reason that the Government has not shown that said shipments were made under like conditions and circumstances and subject to the same regulations and laws as to the shipments made after December 2, 1916, and for the same reason and on the same grounds moves to exclude all evidence of shipments north after December 2, 1916; and all admissions of the defendant that the Gypsy Oil Company shipped such products north and south prior to December 2, 1916, and described same as gasoline as being irrelevant and immaterial on the grounds above stated, and no evidence has been introduced by the Government that would tend to make such admissions relevant and material against this defendant; and on the further ground that said evidence and said admissions do not prove, or tend to prove, against this defendant the nature and quality of the articles shipped and could only become competent, material and relevant if the Government had proved the substance shipped to be gasoline. The defendant moves to strike from the record all evidence relating to the Tribes Gasoline Company, the Ajax Gasoline Company, the Akin Gasoline Company, the Monarch Gasoline Company, the Eagle Gasoline Company, the Motor Fuel Company,

Chestnut and Smith Gasoline Company, Oil States Gasoline Company, I don't know whether the name should be Oil States or All States, the Totem Gasoline Company, Crosby and Gillespie Gasoline Company as to how their plants are operated, the nature of the product produced, how such product was billed and sold, the name under which it was produced and sold, the name by which it was generally called and known among the other employees of said companies at the plants producing the same for the reasons and on the grounds that same is irrelevant and immaterial against this defendant and is hearsay, and is 'res inter alios acta'; and on the further ground that it does not prove such usage as would be binding upon this defendant, it not being shown that such facts came to the knowledge of the defendant or even to the knowledge of the Gypsy Oil Company, the defendant being a Texas corporation and it not being shown that it had any business dealings or connection with any of the companies or persons named; and on the further ground that such evidence does not prove and cannot prove or establish a custom in this, that it is not shown to be the general and cover all persons dealing in the article or to include sellers or buyers as well as the employees in the plants, and in this connection particularly moves to strike the evidence of C. C. Waddell, George Anderson, Charlie McCarroll, W. K. Holmes, James Baxtus Saint in such regard. The defendant moves to strike the admission made by it as to the fact of shipments to the Texas Company set out in counts 36 and 81 of the indictment on the ground that same is irrelevant and immaterial and the Government has introduced no evidence making, or tending to make, the facts admitted in such admission relevant and material evidence against this defendant. The defendant moves to strike the evidence of John F. Haich as to the gasoline plants of the Ajax Gasoline Company, Totem Gasoline Company, Jontil Gasoline Company, Kelly Gasoline Company, Swanson and Black Gasoline Company, Texas Company, Oklahoma Petroleum and Gas Company, All States Gasoline Company and Gypsy Oil Company as evidence in regard to the method of the operation of said plants, the nature of the commodity produced by said plants, names by which it was billed and shipped from said plants and what such commodity was generally called by the

employees of said plants on the ground and for the reason that same is irrelevant and immaterial to any fact at issue in this cause, is hearsay as to this defendant, and being transactions, conversations and declarations by parties not connected with the defendant, and not made in the presence of any of its agents or employees and is not evidence proving or tending to prove, that the nature of the commodity shipped to and received by the Gulf Refining Company set out in the indictment was gasoline, and on the further grounds that it appears the practice of said plants that the bills describing and the articles shipped as gasoline was done under the direction of the superior officers of the witness testifying in accordance with the customers of other persons not shown. The defendant moves to strike the evidence of E. J. League as to the nature of the product inspected by him as evidence as to what the product produced by casinghead gasoline plants in the Oklahoma district is called, and the conversation with Mr. Donovan and Mr. Millard as to the nature of the product produced by the Gypsy Oil Company and what they called the product and also moves to strike Government exhibits Number- 58 and 59, being a report of such witness as to the Gypsy Oil Company product; and also moves to strike that portion of the evidence of said witness relating to the the product of the Franchot plant and how such product was commonly known by the employees in the plant on the ground that same is hearsay, irrelevant and immaterial to any issue in this cause being as to this defendant hearsay and transactions between third parties with whom it is not shown this defendant is in any way connected. The defendant moves to strike the evidence of J. S. Scott as to what the employees at the casinghead gasoline plants in Oklahoma called the products produced by them and how such plants billed and described such products and as to the custom of the employees of such plants calling such products gasoline, on the ground that the same is irrelevant and immaterial 'res inter alios' as to this defendant and not being shown to have come to the knowledge of this defendant and on the ground that such evidence is incompetent to prove the nature of the product shipped to and received by this defendant as set out in the indictment; and on the further ground that the alleged custom or usage attempted to be set forth is not shown

to be known to this defendant; and on the further ground that custom and usage is not competent evidence to prove the nature of the product described in the indictment as being shipped to and received by the defendant on the further grounds that the alleged custom is not shown to be general, to the buyer and the shipping public but is confined to certain localities. The defendant moves to strike the evidence of A. W. Bernhart as to the processes of the Franchot plant on the ground that same is irrelevant and immaterial to prove the nature of the commodity which the indictment charges was shipped to and received by the Gulf Refining Company and the nature of such product cannot be proved or established by the practices, customs, usages, acts or declarations of third persons, and with whom this defendant is in no wise connected. The defendant moves to strike Government Exhibits Nos. 66, 68, 69, 86, 87, 88, 95, 97, 98, 100 to 106 inclusive, and also Government Exhibits Nos. 110 to 117 inclusive, and also Government Exhibits 135, 136, 138, 120 to 134 inclusive, 10, 11, 12, 13 and 14 in the tabulated statement checked by witness Otie No. . . . on the ground that said exhibits are irrelevant and immaterial to any issue in this cause and do not prove or tend to prove that the commodity charged in the indictment to have been shipped to and received by the defendant was gasoline and does not tend to prove or disprove that the commodity described in said indictment was not unrefined naphtha, and on the further grounds it is incompetent to prove the nature of the commodity shipped by declarations or practices of third persons. The defendant moves to strike the evidence of J. W. Freeman as to the nature of the product of the Carter Oil Company, its plant at Carterco and by what terms it was described and spoken of, and billed and shipped as being irrelevant and immaterial as to any issues in this cause and not proving or tending to prove the nature of the commodity charged in the indictment to have been shipped to and received by this defendant, and on the further ground that the nature of such commodity cannot be proved or established by acts or declarations of third parties with whom this defendant is not connected. The defendant moves to strike from the record all evidence as to the operation of casinghead gasoline companies in the manufacture and shipment of the commodities produced

by them; and as to all statements of the employees of said companies; as to the nature, quality and physical characteristics of said commodity produced by them and how said product was called and described by the employees of said companies, or by others in the neighborhood of said companies on the grounds that same are irrelevant and immaterial to any issue in this cause, and on the further grounds that same constitutes transactions between third parties and are hearsay as to this defendant, and on the further ground that same is intended to prove the commission of a crime by the defendants by the declarations of third parties without the knowledge of the defendants by showing such third parties called a certain product by a name designated by them without evidence that the product designated by them was identical in its properties, physical and chemical constituents and attributes, to the commodity which the indictment charges was shipped to and received by the defendant; and on the further grounds that such evidence cannot prove the defendant guilty of the crime charged, being the acts, established usages, customs and practices indulged in by third parties.

"Mr. Diggs: As far as the defendant is concerned, if the court please, we are willing that the court reserve its ruling on this until the close of our case. As the court has intimated he would like to hear argument and the whole matter can be presented more consistently, we believe in one argument.

"The Court: Very well." (S. M., pp. 822-832.)

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"The Court: Mr. Diggs, you haven't got your exception in to the motion to strike.

"Mr. Diggs: I want to ask the court to rule on it.

"The Court: You may have a separate exception to each paragraph on your motion to strike that was made the other day, as if each of the motions were made separate, and you may have a separate exception as to each part referred to in your motion.

"Mr. Diggs: Very well." (S. M., p. 1310.)

LXXXII. The District Court erred in denying defendant's motion made after the evidence in the case was closed,

to instruct the jury to return a verdict of acquittal, or to dismiss the indictment:

(a) Because the evidence did not substantiate, but contradicted the charge; the evidence was insufficient to sustain the charge and there was no evidence in support of certain material allegations of the indictment.

(b) Because there was a material variance between the proof offered and the charge of the indictment.

(c) Because the evidence disclosed there was a controversy involving the construction of tariffs as to whether or not casinghead gasoline was embraced within the description "gasoline," as published in said tariffs, or, whether it was embraced within the description, "unrefined naphtha," as published in said tariffs, of which character of controversy the court had no jurisdiction, such jurisdiction resting wholly in the Interstate Commerce Commission.

LXXXIII. The District Court erred in charging the jury upon said trial as follows:

"The allegation is that throughout the period covering all of said shipments that there was established according to the Acts of Congress joint rates and charges for the transportation of certain properties, to-wit: gasoline in tank cars, and as in that behalf required by law, had printed, and had filed with the Interstate Commerce Commission of the United States, and had published their joint schedules and tariffs of rates and charges which said schedules and tariffs of rates and charges, throughout said period showed the joint rate on each of said routes herein referred to for the transportation of gasoline in tank cars between said points over said four routes, to-wit: (1) over the St. Louis, San Francisco Railway Company, Kansas City Southern and Texarkana & Fort Smith Railway Companies between Kiefer, Oklahoma, and Port Arthur and West Port Arthur, Texas, herein referred to as route number one; and over the Midland Valley Railway Co., Kansas City Southern Railway Co. and Texarkana & Ft. Smith Railway Company between the same places and herein referred to as route number two; and over the Midland Valley Railroad Co., Kansas City Southern Railway and Texarkana & Fort Smith Railway Company between the point of Jenks, Oklahoma, and Port Arthur Texas, herein referred to as

route number three; and over the Atchison, Topeka & Santa Fe, Gulf Colorado & Santa Fe Railroad and Texarkana & Fort Smith Railway Company between the points of Drumright, Oklahoma, and West Port Arthur, and Port Arthur, Texas, and herein referred to as route number four. The rate for the transportation of gasoline in tank cars, the rate on gasoline as shown by the tariff sheets introduced in evidence from December 2, 1916, to June 24, 1918, from Kiefer, Oklahoma, to West Port Arthur, Routes 1 and 2, was 33 cents. From Jenks, Oklahoma, to West Port Arthur, Texas, over the route alleged in the indictment, and which is designated here as route No. 3 was 39 cents; and from Drumright, Oklahoma, to West Port Arthur, Texas, over the route as alleged in the indictment which is the route herein referred to in these instructions as route No. 4, was forty cents. From June 25, 1918, to July 28, 1918, over said route between said Kiefer and West Port Arthur, 41½ cents; and over said route between Jenks, Oklahoma, and West Port Arthur, Texas, 49 cents; and over said route between Drumright, Oklahoma, and West Port Arthur, Texas, 50 cents, of course this means fifty cents per hundred weight. From July 28, 1918, to May 31, 1919, over said route between Kiefer, Oklahoma, and West Port Arthur, Texas, 37½ cents; and over said route between Jenks, Oklahoma, and West Port Arthur, Texas, 43½ cents; and between Drumright, Oklahoma, and West Port Arthur, Texas, over said route 44½ cents.

Now as to unrefined naphtha, the rate from December 2, 1916, to February 2, 1917, over said route between Kiefer, Oklahoma, and Port Arthur, Texas, 19½ cents; from February 3, 1917, to May 1, 1917, from Kiefer, Oklahoma, to Port Arthur, Texas, over said route 19½ cents; from Jenks, Oklahoma, to Port Arthur, Texas, over said route 19½ cents; from Drumright, Oklahoma, to Port Arthur, Texas, over said route 20½ cents; from June 25, 1918, to July 28, 1918, from Kiefer, Oklahoma, to Port Arthur, Texas, over said route 24½ cents; from Jenks, Oklahoma, to Port Arthur, Texas, over said route 24½ cents; from Drumright, Oklahoma, to Port Arthur, Texas, over said route 25½ cents; from July 29, 1918, to May 31, 1919, from Kiefer, Oklahoma, to Port Arthur, Texas, over said route 24 cents; from Jenks, Oklahoma, to Port Arthur, Texas, over said route 24 cents; and from Drumright Oklahoma, to Port Arthur, Texas, over said route 25 cents."

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The District Court erred in refusing to give to the jury the instructions requested by the defendant in each of the following instances, to-wit:

LXXXIV.

"No. 2.

"You are instructed that you cannot find the defendant guilty under any count in the indictment unless you believe from the evidence, beyond a reasonable doubt, that the commodity which is charged in the indictment to have been shipped to and received by the defendant, was gasoline, and the fact that you might believe from the evidence that the commodity shipped was, and should have been described as liquified petroleum gas, and that such liquified petroleum gas bore the same traffic charge as gasoline, is wholly immaterial to any of the issues in this case, and is not to be considered by you in arriving at your verdict.

"Refused because covered by general charge—See No. 16. Exception saved. R. L. Williams, Judge." (S.M., p. 1523.)

LXXXV.

"No. 3.

"You are instructed that it is not sufficient for you to believe from the evidence that the commodity charged in the indictment to have been shipped to and received by the defendant might have been more accurately, or more appropriately, described or designated as unfinished naphtha, but in order to find the defendant guilty, you must believe from evidence, beyond a reasonable doubt, that the commodity described in the indictment was, as is in said indictment alleged, gasoline, and also must believe, beyond a reasonable doubt, that said commodity was not unrefined naphtha.

"Given in general charge." (S.M., p. 1523.)

LXXXVI.

"No. 4.

"You are further instructed that in order to find the defendant guilty, it is not sufficient that you believe, beyond a reasonable doubt, that the commodity shipped to and received by the defendant is not unrefined naphtha, but you must further believe from the evidence, beyond a reasonable doubt, that such commodity is, as it is charged in the indictment, to be, gasoline.

"Refused because covered in general charge. R. L. Williams, Judge." (S.M., p. 1524.)

## LXXXVII.

## "No. 5.

"You are further instructed that every concession, rebate or discrimination, no matter how honestly granted, made or received, is unlawful, and honesty of purpose or design does not prevent in a civil action or proceeding brought for that purpose, the recovery of the amount of any concession, rebate or discrimination established, and, in addition thereto, in proper cases penalties may be recovered. But, in order, for any claimed rebate, concession or discrimination to be subject to criminal prosecution, in order to constitute a misdemeanor or crime, the rebate, concession or discrimination must be knowingly granted, made, solicited, requested or received. That is, that the thing granted, made, solicited, or received must, at the time of the granting, making, soliciting or reception have been known to be a concession, discrimination or rebate, and have been granted, made, solicited or received as such, and it is the granting, making, soliciting or receiving of the same with such knowledge, that the law defines and punishes as a crime, and the law permits a resort to the criminal courts for punishment only where the guilty knowledge, purpose or design exists to grant, make, solicit or receive a rebate, concession or discrimination.

"Refused as requested. Exceptions saved. Given as amended by me. Exceptions saved. R. L. Williams, Judge." (S.M., pp. 1524, 1525.)

## LXXXVIII.

## "No. 6.

"You are further instructed that upon the question of intent you are to consider carefully and give great weight to the uncontradicted evidence to the effect that the defendant corporation, previous to the time of its indictment, readily accorded full and complete access to its records and affairs to the Government officials investigating the same; and you should bear in mind that such conduct is not consistent with the wilful knowledge and design to obtain a concession or discrimination contrary to law; and as further bearing upon the question of intent, you should give consideration to the fact that the evidence shows undisputedly that the defendant company, at no time, sought to conceal its course or the character

of the material shipped, but instead, even after it was aware of the fact that its acts were the subject of investigation by the Government, continued in its course, which conduct is inconsistent with a guilty intent.

"Refused, exception saved. R. L. Williams, Judge."  
(S.M., p. 1525.)

## LXXXIX.

"No. 7.

"You are further instructed that the fact that the employees of the casinghead gasoline plants of the Gypsy Oil Company spoke of the commodity produced in said plants as gasoline, and that the officers and employees of other casinghead gasoline plants in the neighborhood of the Gypsy Oil Company's plants and Government inspectors spoke of the product of said casinghead gasoline plants as gasoline, is not evidence that the commodity produced by the Gypsy Oil Company and shipped to and received by the defendant as unrefined naphtha was, in fact, gasoline, such statements not being evidence of the nature and character of the product so produced, shipped and received, but such evidence was admitted solely for the purpose of establishing the intent, if any, on the part of the defendant to receive a concession or discrimination in event that you should determine from the other evidence in the case, beyond a reasonable doubt, that the commodity shipped to and received by the defendant, was, in fact, gasoline, and you must first find from the evidence, beyond a reasonable doubt, that such commodity was gasoline, before you consider the fact that said commodity was described by the employees of such casinghead gasoline plants as gasoline.

"Refused. Exceptions saved. R. L. Williams, Judge." (S.M., pp. 1525. 1526.)

## XC.

"No. 8.

"You are further instructed that even if you find from the evidence, beyond a reasonable doubt, that the material or commodity alleged in the indictment to have been shipped to and received by the defendant was not unrefined naphtha, and if you should further find from the evidence, beyond a reasonable doubt, that such material or commodity is gasoline, it is your duty to return a verdict of not guilty, unless you further find from the evidence, beyond a reasonable doubt, that, at the time the defendant received the concession or discrimination

set out in the indictment, it knew that the commodity shipped to and received by it was not unrefined naphtha, and was gasoline; and you must further find, beyond a reasonable doubt, that the defendant had no reasonable grounds for believing, and did not, in fact, believe such material or commodity to be unrefined naphtha, but at the time of receiving said concession or discrimination believed such material to be gasoline and received such concession or discrimination having such knowledge, and with the purpose and design of procuring the transportation of such commodity at rates less than those lawfully published and filed applicable thereto.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., pp. 1526, 1527.)

## XCI.

"No. 9.

"You are further instructed that unless all twelve of you are convinced, beyond a reasonable doubt, that the material could not properly be designated 'unrefined naphtha,' you cannot convict, but must return a verdict of not guilty.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1527.)

## XCII.

"No. 10.

"You are further instructed that unless all of you are convinced beyond a reasonable doubt, that the material shipped was actually gasoline, you cannot convict the defendant, and it is your duty to return a verdict of not guilty.

"Refused. R. L. Williams, Judge." (S.M., p. 1528.)

## XCIII.

"No. 11.

"You are further instructed that if you believe that the material shipped may properly be described as either unrefined naphtha or gasoline, you must find the defendant not guilty.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1528.)

## XCIV.

"No. 12.

"You are further instructed that even though you are convinced, beyond a reasonable doubt, that the material

shipped is actually gasoline, you cannot convict unless you are all convinced, beyond a reasonable doubt, that the defendant knew the material shipped could not properly be described as unrefined naphtha.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S. M., p. 1528.)

XCV.

"No. 14.

"You are instructed that the defendant is not on trial for misbranding or misdescribing the commodity alleged in the indictment to have been shipped to and received by it, but is charged in the indictment with having shipped to and receive by it gasoline, and if you find from the evidence, beyond a reasonable doubt, that the commodity shipped to and received by the defendant was not properly and appropriately described by the name of unrefined naphtha and was not, in fact, unrefined naphtha, still you must find the defendant not guilty unless you further find from the evidence beyond a reasonable doubt, that such commodity was gasoline, and should have been shipped and described as such, and further believe, beyond a reasonable doubt, that defendant knew it to be gasoline, and received the alleged concession, or obtained the alleged discrimination with the intent thereby of procuring the transportation thereof at rates less than those lawfully published and filed applicable thereto; and unless you so believe beyond a reasonable doubt, you must find the defendant not guilty.

"Refused. Exception saved. R. L. Williams, Judge."  
(S.M., pp. 1529, 1530.)

XCVI.

"No. 15.

"You are instructed that before you can find the defendant guilty, you must believe from the evidence, beyond a reasonable doubt, that the commodity shipped to and received by the defendant on the dates set out in the indictment was not unrefined naphtha. You must further believe, beyond a reasonable doubt, that the commodity so shipped to and received by the defendant, as described in the indictment, was gasoline, and you must further find beyond a reasonable doubt that the defendant knew the commodity was gasoline and shipped the same with the intent of thereby procuring a concession or discrimination, and that the said commodity was shipped on the dates and at the times in the indictment set forth, and

received the alleged concession or discrimination, knowing it to be such, and with the purposes and design of thereby procuring the transportation of the commodity described in the indictment at rates less than those lawfully published and filed applicable thereto.

“Refused. Exceptions saved. R. L. Williams, Judge.” (S.M., p. 1530.)

## XCVII.

“No. 16.

“You are further instructed that the sole offense with which the defendant is charged, under the indictment, is in having shipped to and received by it, gasoline at a rate less than the legal rate established for gasoline, and unless you find from the evidence, beyond a reasonable doubt, that the commodity so shipped to and received by the defendant was, in fact, gasoline, it is your duty, and you are instructed to find the defendant not guilty even though you might believe from the evidence that the commodity shipped to and received by the defendant was not unrefined naphtha, but was a commodity which should have been shipped under another name than that of unrefined naphtha, and should have borne a rate equal to the rate lawfully published and filed for the transportation of gasoline.

“Given as a part of general charge. Refused. Except. R. L. Williams, Judge.” (S. M., p. 1531.)

## XCVIII.

“No. 17.

“If you are in doubt whether casinghead gasoline is a product of petroleum oil, you must find the defendant not guilty.

“Refused. Exception saved. R. L. Williams, Judge.” (S.M., p. 1531.)

## XCIX.

“No. 18.

“You are further instructed that unless you believe from the evidence, beyond a reasonable doubt, that the defendant company was not honestly, though mistakenly, of the belief that the material shipped might properly be described as unrefined naphtha, you must find the defendant not guilty; in this connection, you should give great weight to the uncontroverted evidence to the effect that the tariff naming the rate on unrefined naphtha was estab-

lished at the request of the defendant company by the carriers involved upon the defendant company's representations that the product intended to be shipped was an unfinished article, that after publication of said tariff and before its becoming effective, the agent of the defendant company advised the agent of the carriers of the intention of said defendant company to begin shipping its product upon the becoming effective of said tariff under the name of, and at the rate applicable to the description of unrefined naphtha; that the shipping orders of the defendant company covering all the shipments set out in the indictment bore, upon their face, the rubber stamp placed thereon by the defendant company indicating that dome placards had been applied to the cars in conformity with the rules governing the safe transportation of the commodity, which rules required and limited the application of said placards to casinghead gasoline cars; further that said rules governing the safe transportation of explosives provided that the proper tariff name shall be used in describing any commodity subject thereto; that such shipments were subject to regular inspection of agents of the carriers whose duty it was to require that the material shipped be properly described, and to the further circumstance that while the evidence clearly shows that the agents of the carrier were at all times in position to be, and were by the defendant fully informed as to the nature of the commodity shipped, no action was taken by such carriers to question the description adopted by the defendant; in these circumstances, unless you believe, beyond a reasonable doubt, that the carriers deliberately intended to accord to the defendant a concession and discrimination, you must find the defendant not guilty.

"Refused, covered, exception saved. R. L. Williams, Judge." (S.M., pp. 1532, 1533.)

C.

"No. 19.

"You are further instructed that unless you are convinced, beyond a reasonable doubt, by evidence that each of the following circumstances is proved with respect to each count of the indictment, viz.:

"(a) That the shipments therein set forth were made, transported and delivered to the defendant.

"(b) That such shipment was of the weight set forth in each such count;

"(c) That the rates alleged in the indictment as applicable thereto were lawfully published and

filed with the Interstate Commerce Commission of the United States and known to the defendant, or posted at the stations from which such shipments were made;

“(d) That the commodity shipped to the defendant in each of the shipments set forth in each count of the indictment, was, in fact, gasoline;

“(e) That the defendant paid to the carriers transporting such commodity charges for such transportation computed upon rates less than those lawfully published and filed, with full knowledge that such payments were so in fact less.

“(f) That such shipments were made upon the dates and in the cars in each such count alleged;

you must find the defendant not guilty; if you have a reasonable doubt as to the existence of any one of the foregoing facts, you must find the defendant not guilty.

“Refused. Exceptions. R. L. Williams, Judge.” (S.M., pp. 1533, 1534.)

#### CI.

##### “No. 20.

“You are instructed that common carriers may lawfully publish and file special rates applicable to the transportation of particular commodities under particular circumstances lower than those applicable to such commodities under ordinary circumstances, and you must regard the action of the carriers as shown by the evidence, in publishing rates applicable to the transportation of unrefined naphtha, at less than the rates previously applying on gasoline as entirely lawful, and you should draw no inference whatever against the defendant from the fact of its taking advantage of such lawfully published and filed rate on unrefined naphtha, providing you have reasonable ground of belief that that term appropriately comprehends casinghead gasoline blended or unblended, and if you believe such term does appropriately comprehend such commodity, you must find the defendant not guilty.

“Refused. Exceptions saved. Covered by general charge. R. L. Williams, Judge.” (S.M., pp. 1534, 2535.)

#### CII.

##### “No. 21.

“If you are in doubt as to whether the proper name of the commodity shipped *in* gasoline or unrefined naph-

tha, or if you believe that neither of such names is the proper name, but that its proper name is casinghead gasoline, you must find the defendant not guilty; if you believe that the defendant company honestly believed that the commodity shipped could be properly designated as unrefined naphtha, regardless of your own conclusions with respect thereto, you must find the defendant not guilty.

"Refused. Exceptions served. R. L. Williams, Judge."  
(S.M., p. 1535.)

### CIII.

"No. 22.

"If you are in doubt whether casinghead gasoline is gasoline you must find the defendant not guilty.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1535.)

### CIV.

"No. 23.

"The act of any officer or agent of the defendant, which may be imputed to it as evidence of guilt, or considered by you as a circumstance from which guilt can be inferred, must be an act done or performed by such officer or agent within the scope of his employment and must be an act done or performed in knowingly receiving, accepting or obtaining a rebate, concession or discrimination.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., pp. 1535, 1536.)

### CV.

"No. 24.

"Only the act of an agent, officer or employee of the defendant done and performed within the scope of his employment, can be imputed to the defendant for the purpose of establishing its guilt, and then only when knowingly done or performed for the purpose of procuring the commodity to be transported in interstate commerce at a rate less than the lawfully published and filed rate, with the intent, by such agent, officer or employee of the defendant obtaining thereby a rebate, concession or discrimination, and after such rebate, concession or discrimination has been obtained or received, no act of an agent, officer or employee of the defendant can be considered by you in determining the intent and guilty knowledge of the defendant, unless it be the act of the agent, officer or employee within the scope of his employment, who pro-

cured the unlawful transportation alleged and obtained the alleged rebate, concession or discrimination.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1536.)

CVI.

"No. 25.

"In order to find the defendant guilty as charged in the indictment, you must find from the evidence beyond a reasonable doubt, that defendant procured the commodity named in the indictment to be transported in interstate commerce over the routes named in the indictment, with the knowledge that it was to be so transported at a rate less than the lawfully published and filed rates fixed for such commodity, with the intention of knowingly receiving a rebate, concession or discrimination, which intention must have continued up to and including the time of the reception of such rebate, concession or discrimination; and, unless you so find beyond a reasonable doubt, you must find the defendant not guilty; and, unless the defendant was guilty at the time of receiving the alleged rebate, concession or discrimination it could not become guilty by any subsequent act of its agents, officers or employees, and the fact that some of its books were subsequently changed or altered, is not evidence of guilt on the defendant, unless it appears that such changes or alterations were made by the agent, officer or employee of the company procuring the rebate, concession or discrimination, and you are instructed there is no evidence showing or tending to show such change or alteration was made, authorized or permitted by any such officer, agent or employee.

"Refused. Exception saved. R. L. Williams, Judge."  
(S.M., p. 1537.)

CVII.

"No. 26.

"You are further instructed that certain evidence has been introduced with reference to changes and erasures of the defendant's records. No evidence has been introduced which shows, or tends to show, that any responsible officer or agent of the company authorized or acquiesced in this action, and you will, therefore, disregard any evidence upon this subject.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1537.)

CVIII.

"No. 27.

"You are instructed that the word, 'refined,' cannot properly be applied to any raw product of nature, but can only be applied to a product whose nature, physical characteristics, or component parts have, in some manner, been altered, changed or added to by the act of man.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1537.)

CIX.

"No. 28.

"You are instructed that distillation is not, under all circumstances, essential to the art of refining, nor is distillation always applied for the purpose of removing impurities from the material distilled, and is often used, not for the purpose of removing impurities, or making the article distilled more pure, but for the purpose of separating the material into its component parts, or some portion of its component part, for the purpose of further treatment, or for the purpose of mixing, blending or combining the same with like or different materials.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1538.)

CX.

"No. 30.

"You are instructed that you cannot consider the evidence relating to the Texas Company paying the gasoline rate at all, unless and until you are convinced, beyond a reasonable doubt, that the material shipped was actually gasoline.

"Refused. Exceptions saved. Partially given. R. L. Williams, Judge." (S. M., p. 1538.)

CXI.

"No. 32.

"You are instructed that the blending or weathering of the product of the plants at Kiefer, Drumright and Jenks for purposes of transportation did not make it a refined product.

"Refused. Exceptions saved. R. L. Williams, Judge."  
(S.M., p. 1539.)

CXII.

"No. 33.

"You are instructed that in order to ship the product

of the plants at Kiefer, Drumright and Jenks it was necessary for the defendant to make it conform to the rules and regulations of the Interstate Commerce Commission and that it was entirely proper for this to be done either by weathering or blending the product to such a degree as to make it conform to the said rules and regulations.

"Refused. Exceptions. R. L. Williams, Judge." (S.-M., p. 1539.)

### CXIII.

#### "No. 34.

"You are instructed that the word 'refine' as used in this case means 'to bring an article to a given standard' and may be accomplished either by adding something to it in the proper proportions, or by taking something from it to the proper degree.

"Refused. Exceptions. R. L. Williams, Judge." (S.-M., p. 1539.)

### CXIV.

#### "No. 35.

"You are instructed that you are not authorized to consider as a refining process anything that may have happened to the casinghead gas below the surface of the earth; in other words, the word 'refine' refers to something that man may have done to the article as distinguished from the processes of nature.

"Refused. Exception. R. L. Williams, Judge." (S.-m., pp. 1539, 1540.)

### CXV.

#### "No. 36.

"You are instructed that the term 'blending' as the same has been used in this case is a process of refining. You are further instructed, however, that the blending of the product of the plants at Kiefer, Drumright and Jenks with sufficient heavy naphtha to make it conform to the rules of the Interstate Commerce Commission did not necessarily make it a refined article. An article may have undergone some of the processes of refining and still be unrefined.

"Refused. Exceptions. R. L. Williams, Judge." (S.-M., p. 1540.)

CXVI. The District Court erred in not giving to the jury, upon its request for further instructions respecting the

safe transportation rules, the following, requested by defendant, or any additional, instructions in reference thereto:

First, that said safe transportation regulations were not rate regulations nor classifications controlling description to be used for rate purposes; second, that the fact that defendant used the description "gasoline" upon shipments where there were no unrefined naphtha rates applicable, should not be taken as an admission against defendant that the proper name of the commodity in question was gasoline, the use of such name by defendant being obligatory in such cases in order to comply with said safe transportation regulations; third, that the fact, admitted by the plaintiff, that defendant at all times complied with said regulations in so far as affixing the "dome cover placard" stamp upon its bill of lading, required and permitted only upon shipments containing casinghead product, and from the time said regulations were amended to provide that such product must be designated under the description "gasoline, casinghead gasoline or casinghead naphtha", the defendant at all times showed upon its bills of lading, in addition to the description "unrefined naphtha" the further description "Casinghead naphtha 1824-K", should be taken into consideration by the jury as evidence that the defendant did not conceal from the carriers the actual nature of the commodity shipped by it.

CXVII. The District Court erred in overruling defendant's motion to set aside the verdict as to each and every count of said indictment and to discharge it or grant it a new trial on account of errors of law committed on the trial of said cause, as follows:

First. On the ground and for the reason that the verdict of the jury so rendered against it, is contrary to law and the evidence.

Second. Because said verdict is against the evidence.

Third. Because said verdict is not reasonably supported by the evidence.

Fourth. For errors of law committed by the court on the trial of said cause, in admitting over the objection of the defendant, incompetent, irrelevant and immaterial evidence.

Fifth. For error of law committed on the trial of said cause in permitting evidence that the employees of the Gypsy

Oil Company, Carter Oil Company, Smith & Chestnut Company, and Crosbie & Gillespie Company, and a large number of other companies, spoke of and referred to the products of said plants as gasoline, over the objection of said defendant.

Sixth. For error of law committed by the court on the trial of said cause in permitting the witnesses, E. L. League, Haigh and others, to testify as to the custom of the employees of casinghead producers and superintendents of plants, with which this defendant was in no wise connected, of speaking of and describing the casinghead gasoline produced at said plants, by the name of gasoline, over the objection and exception of this defendant.

Seventh. For error of law committed by the court on the trial of said cause, in permitting evidence of the fact that casinghead producers with whom this defendant was in no wise connected, shipped and described in their shipping orders and bills of lading, the products of their casinghead gasoline plants, as gasoline, over the objection and exception of this defendant.

Eighth. For error of law committed by the court in permitting evidence to be given that casinghead producers shipped their product over routes and between points other than those named in the indictment, as gasoline, in the absence of a showing that the same was shipped under the identical or similar circumstances, or so shipped and described with the knowledge of this defendant, over the objection and exception of this defendant.

Ninth. The court committed error of law in permitting evidence of the practice of superintendents of casinghead gas plants, and the employees of such plants, as to the manner of shipping and describing the products of such plants, it appearing that said shipments were made to points other than those mentioned in the indictment and made to refineries, over the objection and exception of this defendant, for the reason that said evidence is hearsay as to this defendant, being transactions between persons with whom it was in no way connected, same not shown to be known to this defendant, and not to have been shipped under similar circumstances and conditions under which the products shipped by the Gypsy Oil Company

to this defendant were shipped, and not shown to be shipped over routes and between points where there existed a tariff or rate on unrefined naphtha.

Tenth. For error of law committed by the court on the trial of said cause in permitting to be introduced in evidence, to the jury, over the objection and exception of this defendant, Government's Exhibits numbered 66, 67, 68, 69, 77, 78, 79, 86, 87, 88, 95, 98, 100 to 106 inclusive; and also Government Exhibits numbered 110 to 117 inclusive; also Government Exhibits numbered 135, 136 and 138; also Government Exhibits numbered 120 to 134 inclusive; also Government Exhibits 10, 11, 12, 13 and 14, and the tabulated statement checked by witness Otey, numbered . . . ., on the ground that the same were incompetent, irrelevant and immaterial to any issues in this cause.

Eleventh. For error of law committed by the court in overruling the motion of the defendant to strike from the record the evidence that employees of casinghead gasoline plants in Oklahoma, called the product produced by them, gasoline; and the evidence of A. W. Barnhart, J. W. Freeman and other witnesses named and set out in said motion, showing the practice of the superintendents of casinghead plants, and the employees thereof, calling the product of said plants gasoline, to which action of the court the defendant then and there objected and excepted.

Twelfth. For error of law committed by the court on the trial of said cause in permitting the introduction of that portion of the evidence of the government, which was subsequently stricken out on motion of this defendant, for the reason and on the ground that the same is incompetent, irrelevant and immaterial, and the improper admission of such evidence being prejudicial to this defendant, and to the introduction of which evidence this defendant at the time objected and excepted.

Thirteenth. For error of law committed by the court on the trial of said cause in refusing defendant's motion to instruct the jury to bring in a verdict of not guilty, to which action of the court the defendant at the time excepted.

Fourteenth. For error of law committed by the court on the trial of said cause in refusing the motion of defendant to dismiss said cause on the ground of want of jurisdiction of the court to hear and determine the same, and that it appeared from the evidence in the case that there was involved the construction of the tariffs, and that such construction was necessary in order to determine whether casinghead gasoline was included within the meaning of gasoline, as such word was used in the tariffs, the determination of which question is by law vested solely in the Interstate Commerce Commission, to which action of the court the defendant then and there excepted.

Fifteenth. For error of law committed by the court on the trial of said cause in refusing to instruct the jury that a material variance between the allegations of the indictment and the evidence existed, and therefore the jury should bring in a verdict of not guilty on such account, to which action and order of the court the defendant then and there excepted.

Sixteenth. For error of law committed by the court in permitting the introduction of evidence to the effect that there were rates in force after December 28, 1917, governing the transportation of gasoline, whereas there was no showing that such rates had been lawfully published and filed, or adopted by the Director General of Railroads, in accordance with the statute and the orders of the Interstate Commerce Commission affecting such publication, filing and adoption, to which the defendant then and there excepted.

Seventeenth. For error of law committed in the course of said trial by the attorneys for the government, consisting in improper comment in summing up, to the effect that the United States was pecuniarily interested in the outcome of said trial, and in making improper comments upon the wealth of the defendant, and in making improper comments to the effect that the defendant had violated the safe transportation regulations, notwithstanding the judicial admission of the government to the contrary; this defendant not being on trial on a charge of defrauding the United States, or of violating such safe transportation regulations, and such comment being highly prejudicial and calculated to inflame the jury, and such comment having been excepted to by the complainant.

Eighteenth. For error of law committed by the court in instructing the jury that there were lawfully established, published and filed rates governing the transportation of gasoline subsequent to December 28, 1917, the evidence showing no publication, filing or adoption thereof in the manner and form provided by law, to which the defendant was allowed to except.

Nineteenth. For error of law committed by the court in charging the jury that they could look to the rules and regulations governing the safe transportation of explosives and other dangerous articles for the purpose of determining or assisting them in determining, the meaning of the term gasoline, said regulations being no part of, and having nothing to do with, the rate regulations and classification governing freight rates, to which charge of the court, the defendant was, by the court, permitted to save an exception.

Twentieth. For error of law committed by the court in its general charge to the jury, that articles shipped in Interstate Commerce, should be billed and designated by the name which it is generally called, and if such article is generally used in commerce, its commercial name should be given, and that if an article generally used in commerce, its commercial name should be used, that is, the name by which it is used in commerce. If the article is not an article generally used in commerce and has no commercial name, then the jury should look to its manufacturer and look to those who sell and buy it, to see how it is called, the law being that tariffs named freight rates, are to be strictly construed with respect to the proper technical designation of the article.

Twenty-first. For error of law committed by the court in refusing special instructions of the defendant numbered 6, 7, 8, 9, 10, 11, 12, 14, 15, 17, 19, 21, 22, 23, 24, 25, 26, 27, 32, 33, 34, 35 and 36, to which action of the court the defendant then and there did except.

Twenty-second. For error of law committed by the court in refusing to give, as requested, or in substance, special instructions, numbered 2, 5, 13, 16, 18, 20, 29, 30 and 31, to which action of the court the defendant at the time did except.

CXVIII. The District Court erred in overruling defendant's motion in arrest of judgment as to each count of the indictment, upon the following grounds:

1. Because the pretended indictment herein is not a true bill voted by the grand jury in accordance with law, as set forth in defendant's motion to strike the same from the records of the court and its plea in abatement duly filed and forming part of the record herein.

2. Because the matters and things set forth and charged do not constitute an offense against the laws of the United States.

3. Because the averments of each count of said indictment are too general, vague, indefinite and uncertain to inform the defendant of the nature and cause of the accusation against it, or apprise it with such reasonable certainty of the offence with which it is charged or what it may expect to meet on the trial so as to enable it to make its defense.

4. Because the averments of each count of said indictment are so vague, indefinite and uncertain, consisting in the pleader's conclusion as to what constitutes a concession, that the court is unable to say as a matter of law whether the acts of defendant constitute an offense against the United States.

5. Because the admissions of the plaintiff and the uncontroverted evidence show that there is involved a controversy as to the legal construction and application of tariffs, of which character of controversy this court has no jurisdiction.

And as to Counts 36 to 40, inclusive, and 81 to 85, inclusive, because the said counts are bad for duplicity, in that in each of said counts there is attempted to be charged two separate and distinct offenses.

CXIX. The District Court erred in entering final judgment in said cause against the defendant.

WHEREFORE, the defendant prays that the judgment of the District Court against it may be reversed.

JAMES B. DIGGS,

FRANK M. SWACKER,

*Attorneys for Defendant.*

Dated, January 10, 1921.

Endorsed: Filed in open court, Jan. 10, 1921. W. V. McClure, Clerk U. S. District Court, Eastern District of Oklahoma.

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**Order Allowing Writ of Error and Fixing the Amount of Supersedeas Bond.**

Now on this, the 10th day of January, 1921, at Muskogee, in the Eastern District of Oklahoma, came on to be heard the petition of the defendant, Gulf Refining Company, a corporation, for Writ of Error to the United States Circuit Court of Appeals for the Eighth Circuit, said petition being presented at Muskogee to the undersigned Judge of the United States District Court for the Eastern District of Oklahoma. Said petition also asks that an order be entered fixing the amount of security which said defendant will be required to furnish to supersede said judgment until the final determination of the said Writ of Error and the proceedings thereon, and that it be allowed ten (10) days from this date in which to furnish said security, and that pending the furnishing of said security, that said judgment be stayed and superseded for ten (10) days, and on the furnishing of said security, that said judgment be stayed and superseded during the pendency of such proceedings in error, and said defendant, having filed herewith and submitted its Assignments of Error,

It Is Hereby Ordered, Adjudged and Decreed that said petition for Writ of Error be and the same hereby is, in all things, allowed, and that said Writ issue and that citation thereon issue to the United States citing it to appear in the Circuit Court of Appeals of the United States for the Eighth Circuit, at St. Louis, Missouri, on or before sixty (60) days from the date of said citation to show cause, if any it has, why the errors complained of should not be corrected.

It Is Further Ordered, Adjudged and Decreed that said defendant give security in the sum of One Hundred, Twenty Five Thousand and No./100 Dollars, the same to operate as a supersedeas and cost bond, conditioned as required by law, and to be approved by the Judge of this Court.

It Is Further Ordered, Adjudged and Decreed that the defendant have ten (10) days from this date in which to give said security and that the judgment and sentence of this court be, and the same hereby is stayed and superseded during said ten (10) days, and on the giving of said security and the approval thereof, as herein provided, said judgment and sentence of this court shall be and hereby is stayed and superseded until the final determination of said Writ of Error, and

the proceedings thereon be had in the United States Circuit Court of Appeals for the Eighth Circuit.

R. L. WILLIAMS,

Judge of the United States District Court  
for the Eastern District of Oklahoma.

Endorsed: Filed in open court Jan. 10, 1921. W. V. McClure, Clerk U. S. District Court, Eastern District of Oklahoma.

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**Writ of Error.**

United States of America, ss.

The President of the United States of America, to the Honorable Judge of the United States District Court of the Eastern District of Oklahoma. Greeting:

Because, in the records and in the proceedings, as also in the rendition of the judgment of a plea which is in the said United States District Court of the Eastern District of Oklahoma, before you, at the January Term, 1921, thereof, between the United States of America, who was plaintiff in the said cause, and the Gulf Refining Company, a corporation, who was defendant in said cause, a manifest error hath happened, to the great damage of the said Gulf Refining Company, defendant, as by its complaint appears.

We being willing that error, if any hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then, under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the United States Circuit Court of Appeals for the Eighth Circuit, together with this writ, so that you have the said record and proceedings aforesaid at the City of St. Louis, Missouri, and filed in the office of the Clerk of the United States Circuit Court of Appeals, for the Eighth Circuit, on or before the 11th day of March, 1921, to the end that the record and proceedings aforesaid being inspected, the United States Circuit Court of Appeals may cause further to be done therein to correct that error, what of right, and according to the laws and customs of the United States, should be done.

Witness, the Honorable EDWARD D. WHITE, Chief Justice of the United States, this the 10th day of January in the year of our Lord one thousand nine hundred twenty-one.

Issued at office in Muskogee with the seal of the United States District Court of the Eastern District of Oklahoma and dated as aforesaid.

W. V. McCLURE,

Clerk of the United States District Court  
of the Eastern District of Oklahoma.

(Seal)

By WARREN BUTZ, Deputy.

Allowed by me this 10th day of January, 1921.

R. L. WILLIAMS,

Judge of the United States District Court  
of the Eastern District of Oklahoma.

In the United States District Court of the Eastern District of Oklahoma. United States of America, Plaintiff, vs. Gulf Refining Company, a Corporation, Defendant.—No. 3716 Criminal.

### RETURN TO WRIT.

United States of America, Eastern District of Oklahoma—ss:

In obedience to the command of the within writ, I herewith transmit to the United States Circuit Court of Appeals, a duly certified transcript of the record and proceedings in the within entitled cause, with all things concerning the same.

In Witness Whereof, I hereto subscribe my name and affix the seal of the United States District Court of the Eastern District of Oklahoma.

W. V. McCLURE,

Clerk of the United States District Court  
of the Eastern District of Oklahoma.

(Seal)

By WARREN BUTZ, Deputy.

Endorsed: Filed in open court, Jan. 10, 1921. W. V. McClure, Clerk U. S. District Court, Eastern District of Oklahoma.

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### Citation.

United States of America, to United States of America,  
Greeting:

You are hereby cited and admonished to be and appear in the United States Circuit Court of Appeals for the Eighth Circuit, at the City of St. Louis, Missouri, sixty (60) days from and after the date this citation bears date, pursuant to a Writ of Error filed in the Clerk's office of the United States

District Court of the Eastern District of Oklahoma, wherein the Gulf Refining Company is plaintiff in error, and you are defendant in error, to show cause, if any there be, why the judgment rendered against the said Gulf Refining Company, plaintiff in error, as in said Writ of Error mentioned, should not be corrected, and why speedy justice should not be done the parties in that behalf.

Witness the Honorable ROBERT L. WILLIAMS, Judge of the United States District Court of the Eastern District of Oklahoma, this 10th day of January, A. D. 1921.

R. L. WILLIAMS,

Judge of the United States District Court  
of the Eastern District of Oklahoma.

Service of this citation accepted this the 10th day of January, A. D. 1921.

C. W. MILLER,

United States District Attorney for  
the Eastern District of Oklahoma.

J. STANLEY PAYNE,

Special Assistant to the United  
States Attorney.

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**Supersedeas and Appearance Bond.**

Know All Men by These Presents:

That we, Gulf Refining Company, as principal, and American Surety Company of New York as surety, are held and firmly bound unto the United States of America in the full and just sum of One Hundred Twenty-five Thousand and no/100 Dollars (\$125,000.00), to be paid to the United States of America, to which payment well and truly to be made we bind ourselves, our heirs, executors and administrators jointly and severally by these presents.

Sealed with our seals and dated this 12th day of January, in the year of our Lord, One Thousand Nine Hundred Twenty One.

Whereas, lately at the January Term, A. D. 1921, of the District Court of the United States for the Eastern District of Oklahoma, in a suit depending in said Court between the United States of America, plaintiff, and Gulf Refining Company, defendant, a judgment and sentence was rendered against the said Gulf Refining Company, and the said Gulf

Refining Company has obtained a writ of error from the United States Circuit Court of Appeals for the Eighth Circuit, to reverse the judgment and sentence in the aforesaid suit, and a citation directed to the said United States of America, citing and admonishing the United States of America to be and appear in the United States Circuit Court of Appeals for the Eighth Circuit, at the City of St. Louis, Missouri, sixty days from and after the date of said citation, which citation has been duly served.

Now the condition of the above obligation is such that if the said Gulf Refining Company shall appear either in person or by attorney in the United States Circuit Court of Appeals for the Eighth Circuit on such day or days as may be appointed for the hearing of said cause in said Court and prosecute its said writ of error and shall abide by and obey all orders made by the United States Circuit Court of Appeals for the Eighth Circuit in said cause, and shall surrender himself in execution of the judgment and sentence appealed from as said Court may direct, if the judgment and sentence against it shall be affirmed or the writ of error or appeal is dismissed; and if he shall appear for trial in the District Court of the United States for the Eastern District of Oklahoma on such day or days as may be appointed for a retrial by said District Court and abide by and obey all orders made by said Court provided the judgment and sentence against him shall be reversed by the United States Circuit Court of Appeals for the Eighth Circuit; then the above obligation to be void, otherwise to remain in full force, virtue and effect.

Gulf Refining Company,  
By JAMES B. DIGGS, Its Attorney.  
American Surety Company of  
of New York,  
By HARRY C. ASHBY, Atty. in fact.  
By W. LYLE DICKEY, Countersigner.

(Seal)

Approved:

R. L. WILLIAMS,  
Judge of the United States District Court  
for the Eastern District of Oklahoma.

Endorsed: Filed Jan. 13, 1921. W. V. McClure, Clerk  
U. S. District Court, Eastern District of Oklahoma.

And, to-wit, on the 5th day of February, A. D. 1921, the defendant filed application for enlargement of time in which to file transcript, which application was granted by the court.

Said application and order enlarging time are in words and figures as follows:

**Application for Enlargement of Time to File Transcript.**

To the Honorable ROBERT L WILLIAMS, Judge of the United States District Court for the Eastern District of Oklahoma:

Comes now the defendant, Gulf Refining Company, in the above entitled cause and shows to this Honorable Court that heretofore, to-wit, on the 10th day of January, 1921, final judgment was entered in said cause, and on said 10th day of January, 1921, the Honorable ROBERT L. WILLIAMS, as Judge of said Court did allow a writ of error in said cause returnable to the Circuit Court of Appeals of the Eighth Circuit of the United States, and on said 10th day of January, 1921, a citation was duly issued on said writ of error to the United States of America returnable within sixty (60) days from the date thereof, to-wit, on or before the 11th day of March, 1921: that under the rules of the said Circuit Court of Appeals a transcript of the record in said cause must be filed in said court on or before the 11th day of March, 1921.

The defendant shows and represents that the record in said cause will cover between twenty-five hundred and twenty-seven hundred printed pages, many of such pages being tabulated statements of figures and reproduction of certain rules and regulations of the Departments of the United States introduced in evidence, containing plats and drawings that are both difficult and which take considerable time for making; that the clerk of the court has given said record to Guyette & Humphry of Muskogee, Oklahoma, for printing and that it will be impossible, in the judgment of this defendant and in the judgment of said printers, to have said record printed in time for filing in the United States Circuit Court of Appeals for the Eighth Circuit on or before the return day of said writ of error, and a citation issued thereon, and that it will take about ninety (90) days in addition to said time to print said record and file the same in the United States Circuit Court of Appeals for the Eighth Circuit.

Defendant further shows that it has exercised diligence in endeavoring to procure the printing of said record in time for filing in said Circuit Court of Appeals on or before the 11th day of March, 1921, and before final judgment was entered in the cause; that it has caused the Clerk of said Court to deliver the indictments, motions, pleas to the indictments and the orders of the court on such pleas and motions to Guyette & Humphry, the printers above mentioned, for the

purpose of having the same printed in order to expedite the printing of said record, and that said indictments, pleas, etc., and so much of the record as was then obtainable was delivered to said Guyette & Humphry and set up in type for printing and printed before the final judgment entered herein, and that the Clerk delivered to said Guyette & Humphry the Bill of Exceptions and all papers in connection with the suing out and granting of the writ of error the day after said Bill of Exceptions was delivered by the Judge of the Court to the Clerk of said United [ ] District Court.

Defendant further shows and represents that this application is not made for the purpose of delay, but because it is necessary to procure an enlargement of time for the filing of said return in order that justice may be done, and that said application is made at this time instead of at a later date for the reason that it understands that the Honorable ROBERT L. WILLIAMS, Judge of this Court will leave the State of Oklahoma on or between the 8th and 10th days of February, 1921, and will not return thereto until on, about or after the 10th day of March, 1921.

Wherefore, defendant prays that it be granted an enlargement of time in which to print and file the record in the above styled case in the United States Circuit Court of Appeals of the Eighth Circuit and that your honor make and enter an order in said cause extending the time for filing said record in said Circuit Court of Appeals to the 10th day of June, 1921.

JAMES B. DIGGS,

Attorney for Defendant, Gulf Refining Company.

Endorsed: Filed Feb. 5, 1921. W. V. McClure, Clerk  
U. S. District Court, Eastern District of Oklahoma.

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#### **Order Enlarging Time.**

It is this day ordered, for cause appearing, that the time in which the defendant in the above entitled cause, Gulf Refining Company, may lodge its writ of error, bill of exceptions and transcript in the above entitled cause in the United States Circuit Court of Appeals of the Eighth Circuit be and the same hereby is enlarged and extended for ninety (90) days from and after the 11th day of March, 1921, to-wit, up to and including the 10th day of June, 1921.

R. L. WILLIAMS,

Judge of the United States District Court  
for the Eastern District of Oklahoma.

Endorsed: Filed Feb. 5, 1921. W. V. McClure, Clerk  
U. S. District Court, Eastern District of Oklahoma.

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And, to-wit, on the 17th day of February, A. D. 1921, the defendant filed its praecipe for printing record, which is in words and figures as follows:

**Praecipe for Printing Transcript.**

To the Clerk of the United States District Court of the Eastern District of Oklahoma:

In the above entitled cause, you will please have printed the following as the record in the cause:

1. Indictment.
2. Plea in Abatement.
3. Motion to Strike Indictment from Record.
4. Demurrer to Plea in Abatement.
5. Demurrer to Indictment.
6. Motion for New Trial.
7. Motion in Arrest of Judgment.
8. Journal Entries, including Final Judgment.
9. Bill of Exceptions.
10. Petition for Writ of Error.
11. Assignments of Error.
12. Order Allowing Writ and to act as Supersedeas.
13. Writ.
14. Citation.
15. Certificate of Clerk.
16. Supersedeas Bond.
17. Petition for Extension of Time.
18. Order Extending Time.

JAMES B. DIGGS,  
Attorney for Gulf Refining Company.

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Service of the above and foregoing accepted this the 14th day of February, 1921.

C. W. MILLER,  
United States District Attorney,  
Eastern District of Oklahoma.

Endorsed: Filed Feb. 17, 1921. W. V. McClure, Clerk  
U. S. District Court, Eastern District of Oklahoma.

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And, to-wit, on the 7th day of May, A. D. 1921, the defendant filed praecipe for additional papers to be included in the printed transcript, which is in words and figures as follows:

**Praeceptum for Additional Papers.**

To the Clerk of the United States District Court:

In addition to the papers mentioned in former praecipe for preparing record on appeal, you will include in the record the following:

1. Order sustaining motion to strike plea in abatement.
2. Order sustaining motion to strike motion to quash.
3. Order overruling demurrer.
4. Arraignment and plea.
5. Record of trial.
6. Verdict.
7. Motion to set aside verdict.
8. Motion to transfer.
9. Order granting motion to transfer.
10. This notice and agreement as to contents of printed transcript.
11. Certificate of clerk.

JAMES B. DIGGS,

Attorney for Gulf Refining Company.

Notice of the above and foregoing is accepted this 7th day of May, 1921, and I hereby agree that the above and foregoing may be included in the record in the above case as a part thereof the same and to the same extent as if included in the original stipulation herein covering record.

JOHN T. HARLEY,

United States District Attorney for  
the Eastern District of Oklahoma.

By C. C. LYDICK, Assistant.

Endorsed: Filed May 7, 1921. W. V. McClure, Clerk  
U. S. District Court, Eastern District of Oklahoma.

And, to-wit, on the 21st day of May, A. D. 1921, the defendant made application for additional time in which to lodge record on appeal, which was allowed by the court. Said application and order allowing same are in words and figures as follows:

**Application for Additional Time to File Record.**

The Honorable ROBERT L. WILLIAMS, Judge of the United States District Court for the Eastern District of Oklahoma:

Comes now the Gulf Refining Company, the defendant in the above entitled cause, and shows that it has heretofore se-

cured an enlargement of time for the filing of the record in the above case in the office of the Clerk of the Circuit Court of Appeals of the Eighth Circuit, and that such time expires on June 10, 1921, but that it is informed by the printers to whom the Clerk of the United States District Court gave the preparation and printing of the record in said cause that owing to the printers' strike and trouble raised with their force and the likelihood of greater trouble to come, it will be impossible to complete the printing of the record in time to be filed on June 10, 1921, and that such printers, Guyette & Humphry, of Muskogee, Oklahoma, feel uncertain whether said printing can be completed within sixty (60) days from the 10th day of June, 1921, and said printers have advised the attorney of defendant to such effect and requested him to make this application for extension of time; that this defendant has done everything it could do to expedite the printing of the record in the above case and does not make this application for delay, but because the same is necessary in order to preserve the rights of this defendant and see justice done, and that it is solely owing to labor troubles that it is necessary to make this application.

Wherefore, defendant asks that the time for filing said record in the Circuit Court of Appeals for the Eighth Circuit be extended to and including the 10th day of August, 1921.

JAMES B. DIGGS,

Attorney for Defendant, Gulf Refining Company.

Subscribed and sworn to before me this 20th day of May, 1921. (Seal) Ruth M. Connery, Notary Public.  
My commission expires June 10th, 1924.

Endorsed: Filed in open court May 21, 1921. W. V. McClure, Clerk U. S. District Court, Eastern District of Oklahoma.

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**Order Extending Time to Lodge Record.**

It is this day ordered, for cause appearing, that the time in which the defendant in the above entitled cause, Gulf Refining Company, may lodge its writ of error, bill of exceptions and transcript in the above entitled cause in the United States Circuit Court of Appeals of the Eighth Circuit be and the same is hereby enlarged and extended to and including the 10th day of August, 1921.

R. L. WILLIAMS,

Judge of the United States District Court  
for the Eastern District of Oklahoma.

Endorsed: Filed in open court, May 21, 1921. W. V. McClure, Clerk U. S. District Court, Eastern District of Oklahoma.

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**Certificate of Clerk.**

*United States of America, Eastern District of Oklahoma—ss.*

I, W. V. McClure, Clerk of the United States District Court for the Eastern District of Oklahoma, do hereby certify that the above and foregoing is a full, true and correct transcript of so much of the record in the case of *United States of America v. Gulf Refining Company, a Corporation*, Criminal No. 3716, as was ordered by praecipe of counsel herein to be prepared and authenticated, as the same appears from the records in my office.

I further certify that the writ of error and citation attached hereto, and returned herewith, are the original writ of error and citation issued in this cause.

*In testimony whereof*, I have hereunto set my hand and affixed the seal of said court at my office in the City of Muskogee, this *12* day of July, A. D. 1921.

(Seal)

W. V. McCLURE, Clerk.

By *Warren Butz* Deputy.

1677 And thereafter the following proceedings were had in said cause in the Circuit Court of Appeals, viz:

*Appearance of Mr. R. L. Batts as counsel for plaintiff in error.*

United States Circuit Court of Appeals, Eighth Circuit.

GULF REFINING COMPANY,	}	No. 5899.
plaintiff in error,		
vs.		
UNITED STATES OF AMERICA.		

The clerk will enter my appearance as counsel for the plaintiff in error.

R. L. BATTS,  
*Frick Annex, Pittsburgh, Pa.*

(Endorsed): Filed in U. S. Circuit Court of Appeals, Jul. 22, 1921.

*Appearance of Mr. Frank M. Swacker as counsel for plaintiff in error.*

The clerk will enter my appearance as counsel for the plaintiff in error.

FRANK M. SWACKER,  
*120 Broadway, New York, N. Y.*

(Endorsed): Filed in U. S. Circuit Court of Appeals, Jul. 23, 1921.

1678 *Appearance of Mr. James B. Diggs as counsel for plaintiff in error.*

The clerk will enter my appearance as counsel for the plaintiff in error.

JAMES B. DIGGS,  
*Tulsa, Okla., Box 2044.*

(Endorsed): Filed in U. S. Circuit Court of Appeals, Jul. 23, 1921.

*Appearance of Mr. Frank Lee, U. S. attorney, as counsel for defendant in error.*

The clerk will enter my appearance as counsel for the defendant in error.

FRANK LEE,  
*United States Attorney, E. D. Okla.*

(Endorsed): Filed in U. S. Circuit Court of Appeals, Jul. 30, 1921.

1678 GULF REFINING COMPANY, A CORPORATION, *vs.*

*Appearance of Mr. William D. Riter, Assistant Attorney General, as counsel for defendant in error.*

The clerk will enter my appearance as counsel for the defendant in error.

WILLIAM D. RITER.

(Endorsed) : Filed in U. S. Circuit Court of Appeals, May 1, 1922.

1679 *Order of submission.* May term, 1922, Monday, May 1, 1922.

This cause having been called for hearing in its regular order, argument was commenced by Mr. R. L. Batts for plaintiff in error, continued by Mr. William D. Riter, Assistant Attorney General, for defendant in error, and concluded by Mr. Frank M. Swacker for plaintiff in error.

Thereupon, this cause was submitted to the court on the transcript of the record from said district court and the briefs of counsel filed herein.

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*Opinion.*

United States Circuit Court of Appeals, Eighth Circuit.

No. 5899.—September Term, A. D. 1922.

GULF REFINING COMPANY, A CORPORATION,  
plaintiff in error,

*vs.*

UNITED STATES OF AMERICA, DEFENDANT IN  
error.

In error to the District  
Court of the United  
States for the Eastern  
District of Oklahoma.

Mr. R. L. Batts and Mr. Frank M. Swacker (Mr. James B. Diggs, was with them on the brief), for plaintiff in error.

Mr. William D. Riter, Assistant Attorney General (Mr. James M. Beck, Solicitor General of the United States, was with him on the brief), for defendant in error.

Before Lewis and Kenyon, Circuit Judges, and Johnson, District Judge.

LEWIS, Circuit Judge, delivered the opinion of the court.

The plaintiff in error (defendant below) was convicted and fined on 99 counts of an indictment charging that it received concessions on shipments of gasoline to its refinery at Port Arthur, Texas, from Kiefer, Drumright and Jenks, Oklahoma, in violation of section 1 of the act of February 19, 1903 (32 Stat. 847), as amended by the act of June 29, 1906 (34 Stat. 587). The shipments were all made By the Gypsy Oil Company between December 2, 1916, and the early part of 1919; but the freight charges were paid by defendant, and it alleged that they were under the lawful rate, the contention being that the difference in amount between the rate on gasoline and what was paid (rate on unrefined naphtha) con-

stituted a concession. Prior and subsequent to December 2, 1916, the tariff gave a rate to Port Arthur of 33 cents per 100 on gasoline in tank cars, but on that date a rate regularly established of 19½ cents per 100 on unrefined naptha in tank cars became effective and continued throughout the time covered by all shipments in controversy. There were, then, the two rates between points of origin and destination, one on gasoline in tank cars, the other on unrefined naptha in tank cars, both listed in the tariff under the general heading: "Oils." Prior to December 2 shipments were made at the rate on gasoline, and the commodity was so designated by the shipper, thereafter the same commodity was shipped to Port Arthur at the rate on unrefined naptha, and the commodity so designated. The indictment charges that the commodity shipped was in each instance gasoline; hence, the burden was on the prosecution to establish that the commodity was gasoline—not unrefined naptha. When the trial opened it was stipulated, among other things:

"Throughout the aforesaid period (covering the shipments), and prior thereto the Gulf Oil Corporation was a corporation organized and existing under the laws of the State of New Jersey; that the Gypsy Oil Company was a corporation under the laws of the State of Oklahoma; that the Gulf Refining Company was a corporation organized and existing under the laws of the State of Texas; that the Gulf Pipe Line Company was a corporation organized and existing under the laws of the State of Texas; and during said period all of the capital stock of the Gypsy Oil Company, Gulf Refining Company and the Gulf Pipe Line Company was owned and controlled by the Gulf Oil Corporation, except that the directors of each of the three last mentioned companies held shares in each of said companies sufficient to qualify them as directors."

We gather from the record that the Gulf Oil Corporation has its main office and conducts its principal business at Pittsburgh, Pa., that the Gulf Refining Company owns and operates an oil refining plant at Port Arthur, that the Gulf Pipe Line Company is a carrying company owning a pipe line from the Oklahoma oil fields to the defendant's refinery at Port Arthur, through which crude oil 1682 is carried to the refinery, and that the Gypsy Oil Company owns and operates at Kiefer, Drumright and Jenks what are known as casing-head compression plants, into which natural gas is conducted and its alleged gasoline contents extracted in liquid form by condensation under compression.

The evidence shows that when crude oil reached the refinery at Port Arthur it is put through the distilling process. As heat is applied the competent parts known as the lighter ends vaporize first, and all of them, down to what is called the kerosene cut, when taken off and condensed into liquid form, are technically and commercially known by the generic name of naptha, which embodies gasoline, benzine and naptha. By further distillation those three may be separated, coming off in vapor in the order named for condensation, the naptha part being then designated as heavy, crude or painter's

naptha. A part of this crude or painter's naptha is shipped in tank cars to the compression plants at Kiefer and Drumright. Their product, if exposed, will soon become gaseous. Its vapor tension is more than ten pounds to the square inch, and there are restrictions by the Interstate Commerce Commission on its shipment on account of its dangerous character. One of the witnesses testified that if it were shipped and the dome of the tank car in which it was contained were removed at the end of the route it would all escape in the air. The crude or painter's naptha having a gravity around 54, which the defendant shipped to the casing-head compression plants, was for the purpose of mixing or blending with the product of those plants, which served two purposes: the blending reduced the vapor tension, and when that was brought below ten pounds the restrictions on shipment were not so severe, and secondly, the naptha acted as a sponge to the casing-head condensate (commonly known as casing-head gasoline) and prevented to a great extent evaporation. The blending at the two plants was in the ratio of 30 to 35% naptha to 65 to 70% casing-head gasoline. At the Jenks plant another method was pursued. Instead of blending the casing-head gasoline with the naptha the casing-head was exposed and permitted to evaporate until its most volatile parts had escaped; it was then steamed and the vapor tension thus reduced below ten pounds. This was the commodity—blended from two plants and weathered from the other—shipped under the "unrefined naptha" rate, but which the indictment charges to be gasoline.

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1683 Prior to December 2, 1916, the condensates of the three plants and the blended commodity of the two plants were commonly known to and spoken of as gasoline by those employed at the plants. While shipments from the three plants were moving to Port Arthur after December 2 as unrefined naptha, the same commodity was shipped from those plants to the Gulf Oil Corporation at Pittsburgh as gasoline. There was no rate on unrefined naptha to that point. The gravity of casing-head gasoline was around 85, but the blended and weathered commodities had an average gravity of 76. Gravity is said to express the ratio of densities of oil and water at given temperatures. In the oil industry it is of some weight but not a controlling guide to determine the gasoline content, or whether the particular product is gasoline. There are many specifications for that purpose in which there are slight differences, those for aeroplane gasoline, fighting gasoline for bombing planes, gasoline that meets the different tests of different States, etc. All of them give an approximate overpoint, that is, the degree of heat when vaporization begins, and the degree of heat known as the dry point, when vaporization is complete. The uniform requirement is the per cent of recovery. The distillates must equal 95% or more of the gasoline put through the still on a test. Out of 100 gallons at least 95 gallons must be recovered. The highest recovery gotten from the blended and weathered products shipped to Port Arthur was 88%, and it went as low as 76%. Crude naptha is a part of the oil off the crude

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oil as far down as the kerosene cut. The first thing that the defendant does at its refinery is to put the oil in the crude still, and naptha therefrom is the first cut. It is then pumped away to tanks and agitators, and is given a sulphuric acid treatment to remove the impurities. It is known as the naptha fraction and contains gasoline, benzine and naptha. It then goes to the steaming still for the purpose of making various cuts of it. Gasoline is the lightest of the three and comes over first, benzine the intermediate, and naptha the remainder and heaviest cut. Naptha applies to all of them as a body. After the division into gasoline, benzine and naptha the gasoline is given further treatment, and if it does not meet specifications it is necessary to blend it with other refinery products of lower or higher volatility, and sometimes with both. None of the commodity received from

Oklahoma and here in question was ever shipped out from 1684 defendant's refinery in the condition in which it was received.

It was testified that that would be criminally negligent, that it was not fit to be put on the market, too volatile and dangerous, that it had to be refined when it got to Port Arthur by further blending with the still products. A very high gravity gasoline is made at the refinery in the distillation of crude oil, which also is never shipped as gasoline because dangerous, and because it would not meet any specifications for gasoline, and this is always used at the refinery for blending with the commodity that comes from Oklahoma. The commodity as finally treated and blended at Port Arthur and shipped from there to the market as gasoline contains not more than 25% and as low as 5% of what was received from Oklahoma, shipped as unrefined naptha. The remaining 75 to 95% consists of refinery gasoline and painter's naptha, obtained through distillation from the crude oil at Port Arthur. The blending process frequently has to be done the second time. Distillation tests must be made to meet specifications. Compressed air is turned into the tank for thorough mixing, so as to get the distillation tests accurately. The unrefined naptha shipped from Oklahoma has various names among employees at the refinery, such as Kiefer gas, and others. Employees and managers of other casing-head compression plants in Oklahoma testified over defendant's objection as to the products of their plants, that they blended with naptha in various proportions and shipped out the blended commodities to points other than Port Arthur as gasoline, and that one plant shipped its blend to the Texas Company at Port Arthur as gasoline. At some of them the blends ran as high as 75% of naptha, some 50%. There was great diversity in the character and quantity of the material used in blending among the casing-head producers, some used naptha, some kerosene, some fuel oil. The blending would run from 25% to 95% of material other than the casing-head gasoline, and would then be shipped out from these other plants as gasoline. Some of them did not blend but "weathered" (exposed so the lighter ends evaporated) their product below ten pounds pressure, and then shipped the residue as gasoline. Of the blended commodity at Kiefer there was shipped out of the same

X tank one car designated as gasoline, destined to the Gulf Oil Corporation at Pittsburgh, Pa., and another designated as unrefined naphtha to the defendant at Port Arthur. /The defendant's traffic

agent originally asked the carriers for a transit rate on gasoline; that is, he represented that the commodity was to be moved from Oklahoma points to Port Arthur for further handling. He said he wished to move a quantity of low grade naphtha at Port Arthur to Oklahoma points, work it through the plants there, and move it back to Port Arthur and rework it again before it could be put on the market. There was an arrangement of that kind in Toledo, Findlay, and Lima, Ohio. That request was not granted by the carriers. He then asked that they publish a rate on unfinished naphtha from Oklahoma points to Port Arthur. In that connection the railroads considered the decision of the Interstate Commerce Commission in *National Refining Company v. M. K. & T. Ry. Co. et al.* (23 I. C. C. 527), decided May 7, 1912, in which reparation was awarded. The shipments were from Oklahoma points to the complainant's refinery at Coffeyville, Kansas. The carrier charged the rate on refined oil. The commission, in awarding reparation, said that the product seemed to have no distinct commercial designation or trade name, that complainant referred to it as "crude product"; one of the shippers described it in bills of lading as "crude benzine." It was obtained from the crude oil by a skimming process, by which the lighter ends of the oil were extracted and the residue marketed as fuel oil. The skimming process was accomplished by distillation carried just far enough to separate the lighter from the heavier oil, the former amounting to about one-fourth part. The commission held that inasmuch as there was no trade name or commercial designation for the commodity, that they would leave its description to the carrier in the new rate. Attention of the carriers was also called to the fact that one of the connecting carriers had made a rate from Oklahoma points to Baton Rouge on a commodity obtained from crude oil in the same way as in the *National Refining Company* case, designated as unrefined naphtha. The defendant's agent in the light of the foregoing facts asked for a rate on "unfinished naphtha," but the carriers made a rate on the commodity under consideration as "unrefined naphtha." It was testified that the commodity that moved to Baton Rouge was from a skimming plant, and that the naphtha fractions down to kerosene, called the tops off of crude oil, were shipped to Baton Rouge. It and the commodity that went to Coffeyville had no substantial difference from the commodity now under consideration, except they contained no casing-head gasoline. It was shown, and the fact emphasized by the prosecution, that some of the Gulf Refining Company records which showed the receipt of the commodity at Port Arthur in the early part of 1917 described it as "Kiefer gasoline," and that the word gasoline in many instances had been erased and that the books were in that condition when they were presented to the grand jury. It was not shown who kept the books, nor who made the erasures. It was

also shown that the heading on a number of pages listing shipments of the commodity from Oklahoma to Pittsburgh had been cut off, but that letters written to the Pittsburgh office in connection therewith referred to some of the shipments as Kiefer gasoline. These erasures and changes were characterized as admissions and introduced as such. None of the blended or weathered commodity was ever marketed by defendant in the condition in which it was received, as gasoline or otherwise; samples of it were taken and tested on receipt as guides to proper blending with refinery products in making gasoline, losses were much less in the blending process than in distillation at the refinery and the cost was less, and when that could be done it was the method adopted. In rare instances the distillation process had to be used, but that was unusually on account of the fact of the company being in straightened circumstances for certain material, and occasionally a car would be badly off color. Blending is the general practice not only as to the making of gasoline but kerosene, lubricating and other oils. A refinery could not be economically conducted without blending, and it is the general practice at refineries. Not over ten or twelve per cent of the casing-head condensate entered into the final blend at the refinery of the finished gasoline product that was shipped out as such. It ran as low as 5%. It was shipped to Port Arthur to blend with other material. The process is carried on under the direction of skilful men and requires years of experience.

Mr. Taber, vice president of the Gulf Oil Corporation and a resident of Pittsburgh, had been in the petroleum business constantly since 1882. He started the Gypsy Company's compression plant at Kiefer, and had been in general supervision of it ever since. He had read extensively all treatises and literature that could be had on the oil industry. He had originated and given names to many petroleum products. He read critically on request Bacon and Hamor's book entitled, "American Petroleum Industry" before its publication. It is considered a standard work on the subject and is widely used.

1687 He had also revised the manuscript of another text book on the subject, limited to the refining practice. He had just recently reviewed the manuscript of a book by Hamor and Padgett on the "Evolution of Petroleum and Natural Gas." He had written a good many technical papers on the subject and was a member of societies interested in the study of the petroleum industry. From the beginning it was customary to call the condensed portion of the vapor down to that used for making kerosene or lamp oil, naphtha. That is the generic name applied to the whole product that comes over above the kerosene cut. The U. S. Census Report for 1885 stated that from 100 bbls. of crude oil 15 bbls. of naphtha could be made, and that out of the 15 bbls. about a half-barrel was made into gasoline, the remainder of the 15 bbls. was called naphtha. But later automobiles came so fast and there was such a demand for gasoline that it was necessary to go to the naphtha to get something heavier. It was necessary to make the carburetors so they would

burn the heavy material, and finally the whole naptha product was utilized and prepared and called gasoline. The demand became so great that some kerosene was put in it, and again the carburetors were changed to burn heavier and heavier material, but they still called it gasoline. The automobile business has run away with the petroleum business. People in the crude oil business attempted to keep up with the automobile requirements. In distillation the parts that come off first down to kerosene are called naptha fractions; that is the generic or family name for them. At present gasoline is known as a combination of products of naptha produced from crude oil and made suitable for use in the general run of automobiles which use suction carburetors; not material that will run one make of car but many makes of cars equipped with the ordinary suction carburetor. He was familiar with the product at Kiefer, Drumright and Jenks, does not consider it gasoline but naptha. It will not fulfil any specifications for gasoline; it requires refining to fit it for the market. The Gypsy Company, when it started in business, attempted to market its product direct to customers in the northwest and failed. All sorts of blends with casing-head gasoline are made. Some blend with kerosene, some with heavy naptha. In order to make a gasoline it is necessary to make a different blend than the one used at Drumright and Kiefer. If weathered enough it could be used to run a car, but that process would take off about 70% of it. It might have to be weathered to less than 30% to run a car satisfactorily.

1688 The weathering made at Jenks and the blending at Kiefer and Drumright was to prevent excessive evaporation and reduce vapor tension. It has too much light end. In the refinery business anything which improves the quality of the oil or petroleum produced and fits it for market is considered refining. Blending is a refining process. Casing-head gasoline has too much light end for safety and for use economically. There is excessive loss by evaporation. In the ordinary specification for gasoline you must get back 95% of what you start with. From the unrefined naptha shipped from Kiefer, Drumright and Jenks you would not get back over 88% possibly 80%. Under the specifications of the U. S. Government if you do not have 95% of what you started with it is rejected and refused. You have to make the product comply with that requirement, and the only way to do it is to take off the light end. Different States require different specifications which have to be met. Unrefined naptha is a proper designation for the commodity in question.

Col. Burrell, holds degree of chemical engineer from Ohio University and doctor of science from Wesleyan University; was in the employ of the U. S. Bureau of Mines from 1906 to 1916; 1917 was with the U. S. Army, in charge of chemical warfare service, research division, which had to do with the development of all sorts of gases, etc. There were about 1,500 technical men in the division, and he was at the head. He first discovered the method of finding the real composition of casing-head natural gas. It was known to be a mix-

ture of paraffin hydrocarbons, but it was not known what they were and in what quantities. He has written various publications, bulletins, magazine articles, and technical papers on gasoline, also wrote a book on the subject; belongs to a number of societies engaged in technical research; is familiar with the literature on the subject; is engaged in the operation of an experimental refinery; has built several refineries. He considers blending a refining process, requiring skill and experience to perform it. Many casing-head plants started compression about 1912. Until the art of blending casing-head gasoline with heavier refinery distillates was perfected the product was almost a drug on the market. That made a tremendous amount of natural-gas gasoline available for use as automobile fuel. Naphtha is the light distillate which comes off from crude oil down to the kerosene cut. It is a generic name. He defines gasoline as

an inflammable liquid, a mixture of hydrocarbons suitable for use in any kind of vaporizers. There is a great deal of confusion in the nomenclature of the petroleum industry. The material shipped from Kiefer, Drumright, and Jenks is not gasoline, although it is popularly called gasoline. The name unrefined naphtha is a proper and appropriate description of the material. Gasoline is a wrong name for it. It would be just as appropriate to apply it to the topping or skimming plant material (shipped to Baton Rouge) described by the Carter Oil man. Casing-head gasoline is not usable in an automobile; it is too volatile and vaporizes too rapidly, and there is great loss on distillation. Most gasolines would not lose over 2 to 2½% on distillation test.

Dr. Garner, mechanical engineer, Pittsburgh; of recent years engaged principally in reference to natural-gas gasoline recovery; has university degree; now in Mellon Institute of Industrial Research at Pittsburgh. Gasoline in the strict sense is that low boiling portion of naphtha having a gravity from 76 to 82 and usable for the purpose of illumination. It is also used as a term applicable to products of petroleum to be used for vaporization purposes. It is a product of the naphtha fractions of crude oil. Used as a commercial term or article of commerce, it is not considered gasoline unless it can be used for vaporization purposes, such as running a car or gasoline stove. The product shipped from Kiefer, Drumright, and Jenks to Port Arthur is not gasoline in any proper sense of that word. Unrefined naphtha describes that commodity very accurately. About 96% of all the material used and called gasoline is used in internal-combustion engines with suction carburetors. Practically all of them are blended.

Dr. Schock, chairman School of Chemistry and Mechanical Engineering, University of Texas. In defining gasoline we must consider its use and take that as the basis for a definition. It is most used in the ordinary automobile. It is primarily obtained from petroleum. What we use to-day and call gasoline is not identical with the material that was called gasoline years ago; it was more volatile than the present gasoline. It is a liquid, volatile, inflammable, but

so made up, and is a mixture of a number of substances in such proportions, that a part only will volatilize when air is blown through it, as is done in the ordinary automobile carburetor. The amount

thus changed to strict gaseous form must not be very large. 1690 There is a degree of interchangeability between the words "gasoline" and "naptha," but it is a little one-sided. All gasoline can be called naptha; that is, it is a product of naptha. The word "gasoline" designates the naptha of certain properties, whereas the word "naptha" designates any volatile inflammable liquid hydrocarbon mixture. He was familiar with the product shipped from Kiefer, Drumright, and Jenks to Port Arthur; it is not gasoline; it is appropriately described as unrefined naptha. The words "unrefined naptha" would also embrace such material as a topping or skimming plant produces. A material that will begin to distill at least as low as 140 deg. F., that will distill 20% at least at 221, that will distill 45% at 275, and that will distill at least 90% at 356, and dry point not exceeding 428, and a minimum recovery of 95%, will run a car. The initial boiling point might be as low as 100. Gasoline that will run a car must be made up with a mixture of substances which will give a rather continuous course, extending from the lowest to the highest, in order that the mixture, when it is sucked or drawn through a carburetor, may partly change to a gas and the remainder be drawn along in a fine mist. By using a mixture of lubricating oils and casing-head gasoline any gravity may be obtained, and as it is used in the car, drawn through air, we would get vapor only and a very light mist because the lubricating oil would be too heavy to be drawn along. Gravity is not a guide.

Witness Miller, a petroleum refiner and consulting engineer, for a while manager of the refining department of Cosden & Co., handled millions of gallons of casing-head products from compression plants; is familiar with still-gas produced by the distilling process at refineries. If it is not condensed into a liquid by the compression or other process, as may be done, it escapes into the air; if condensed it is to a certain extent analogous to casing-head gasoline. It is not a finished product, it must be blended or weathered. Is familiar with the material shipped from Kiefer, Drumright and Jenks to Port Arthur; it is not suitable for gasoline and he does not consider it gasoline. Gasoline is that fraction of crude petroleum lying within the range of boiling points and other necessary points which will satisfactorily and economically operate an internal combustion motor. This material will not do that; it must be blended with products of crude oil in such proportions as to bring the material to the point where it will operate an internal combustion motor satisfactorily and economically, and blending is the most economical method of bringing it to that point. It can be done by excessive weathering or by distillation, but the weathering required for that purpose would result in a loss of 60 to 75% of the original amount. The percentage of casing-head in the final blending should be kept down to 3 to 5% of the total mixture, according to his ex-

perience, both with Pierce Oil Company and Cosden refinery. There are few refineries that use more than 10% of the casing-head product. Naptha is a generic term which describes that fraction obtained by the distillation of crude oil before the product kerosene is reached. The process of blending is a process of refining. The material shipped from Kiefer, Drumright and Jenks to Port Arthur is properly designated by the name of unrefined naptha. It might also be appropriately called unfinished naptha or unfinished gasoline blend, or unrefined casing-head blend, or unfinished casing-head blend. Unrefined naptha will embrace any naptha which is not ready for use, not completely refined; it will embrace materials referred to as tops. It would not be possible in this day for a refinery in the production of gasoline to operate successfully without blending as part of its process. There is great confusion and misuse of names. The names of the finished product are frequently applied to the materials which ultimately become such product. It is not a practical thing to blend casing-head at the plant to a finished marketable condition, to do that you would have to bring to the casing-head plant 90 to 95% of other refinery products, or locate the refinery at the casing-head plant, and as the well was exhausted move the refinery. Blending is for the initial point, for end points, for gravity; not for one point but anywhere from 5 to 14 points, including various distillation points in the curve, also to meet the various specifications, and it requires considerable experience and an intimate knowledge of the products used.

Dr. Bacon, chemist, holds master and doctor degrees; in Government service until 1911; since then in the Industrial Research Department University of Pittsburgh, now Mellon Institute; was Colonel on General Pershing's staff in France and in charge of chemical work for one year; member of technical societies. One of the authors of Bacon and Hamor on American Petroleum Industry. Has written a large number of papers for scientific journals; made a large number of tests of various kinds of petroleum products; his studies have embraced casing-head gasoline. The material now sold as gasoline was not manufactured prior to the advent of the automobile. Crude oil was then run into other products. The material shipped from Kiefer, Drumright, and Jenks to Port Arthur is not gasoline. Gasoline is a mixture of combustible liquids, a finished product that will satisfactorily run a motor car. The automobile industry has dominated the petroleum industry so that demand for oil has been almost entirely in the direction of gasoline; 90 to 95% of it is used for running automobiles. Naptha fractions of petroleum include all fractions from the beginning up to illuminating oil. Gasoline now contains portions of the crude heavier than the naptha fractions were a few years ago. In the early days when kerosene or lamp oil was wanted the naptha fractions were exceedingly narrow, but now they are made as wide as can be. The term gasoline is loosely applied to the material from which the finished product is to be produced. We speak about boiling point,

Baume gravity and distillation curves; that is one way to look at these things and state that it is a satisfactory gasoline; but the thing behind all this is the actual work. We try it in an engine and if we find it performs satisfactorily it is gasoline; then we make these boiling points and Baume gravity, etc. We have a gasoline engine in the Mellon Institute which is connected up with an apparatus to register the power it develops. Have tested on that machine a very large number of gasoline materials. Then we make gravities and initial points and end points and get the curve of the gasoline, which we know is good gasoline because we worked it out in the engine; then if we get a new gasoline we could probably tell from its boiling points and its curve as to whether it also would be satisfactory gasoline. The thing we do is done in all scientific institutions. We not only test the gasoline in the engine where we can measure the horsepower but we get several different kinds of cars and drive them over the roads near Pittsburgh and see how they perform. I have tested the material commonly called casing-head gasoline; it did not make the engine run at all. Once in awhile you get one that will make the engine run in very unsatisfactory manner. It has very little power and the consumption will be very high; it will spit and misfire, and things of that kind. Dr. Garner and he made distillation curves of this casing-head gasoline and of this blended product, and

they indicate that neither would run a car; they are not 1693 gasoline. Naptha is a term used for any low boiling product of petroleum which boils below the illuminating oil fraction.

[ The blending process is a part of refining. Casing-head can be weathered down to a point where it would run a motor car, but not in a way very satisfactory. It was shown that Bacon and Hamor used the term unrefined naptha, and a Government publication on the chemical properties of California petroleum issued in 1914 uses that term, the term comprehends casing-head gasoline. The witnesses Burrell, Bacon, Garner, and Schock all participated in testing casing-head gasoline and the blended product at the Jenks and Kiefer plants on Packard and Dodge motor cars during the trial, and all testified that the experiments were failures.

+ The prosecution then called W. P. Dykema, graduate Michigan College of Mines in 1905, mining engineering from 1905 to 1909, then did surveying and general engineering in the California oil fields, then returned to silver and copper mining, then in the city engineer's office of Los Angeles until August, 1915, then employed by U. S. Bureau of Mines until March, 1920, and now consulting petroleum engineer; devoted most of his time since 1915 to study of casing-head gasoline, visited plants throughout the country, has written Government bulletins on compression and refrigeration of natural gas published by the Bureau of Mines, petroleum division. Any liquid made from natural gas by compression would in his opinion run a car, that even the lightest product would be good motor fuel; had ridden in cars run by gasoline from compression plants; does not consider compression a refining process; thinks the product

was already refined because it needs no purification. It is commonly known as gasoline in the trade and scientific world; never heard it called unrefined naphtha before, that name is not appropriate; it is misleading in that it would need further refining and purification; it is fit for use as it is and is marketable as it is. The process of blending is not refining; it might be termed a finishing process. He defines gasoline as the lighter petroleum distillates fit for use in an automobile. Said it was not dangerous in the hands of anyone who could use it with reasonable caution, but more dangerous than curb gasoline and would not give equal power per gallon. The fractions, including gasoline, have for a long time been called by the generic name of naphtha. Naphtha embraces all gasoline. Naphtha fractions, after they have been separated in distillation, can be properly  
1694 called unrefined naphtha; they are the light ends of petroleum which need further refining. Part of it is then cut out for gasoline fractions. Refineries are large purchasers of raw casing-head and blended casing-head gasoline. He did not know what they did with it. The attention of this witness was then called to the bulletin of which he was the author, published by the U. S. Bureau of Mines in 1918, entitled: "Recovery of Gasoline From Natural Gas by Compression and Refrigeration," and this excerpt therefrom seems to nullify his testimony that casing-head gasoline is a good or suitable motor fuel:

"Condensate produced by compression is also an undesirable fuel for gasoline engines. It is exceedingly volatile, which causes losses in handling, is dangerous because fumes are easily formed, and gives less power as compared with equal volumes of heavier distillates, a larger number of gallons being required to develop the same power. It gives a quick, sharp explosion in a motor cylinder, but seems to lack 'push' after the explosion has taken place."

The bulletin later on treats rather fully of the methods of blending, and among other things says:

"Some blending companies use with the usual naphthas small quantities of straight still-run gasoline in order to increase the proportions of those hydrocarbons of which the naphtha and the condensate contain only small percentages."

It points out that the products of different casing-head plants are different, even those in the same field; that the gases they treat are different and that each must be separately considered and studied in order to know the percentages of the various hydrocarbon fractions in the casing-head gasoline. He also participated in the test of the casing-head gasoline and of the blended commodity with two automobiles during the trial, and considered the test fairly successful as to the car in which he rode; said that he thought the trouble they did have with it could have been avoided if the carburetor had been adjusted.

Dr. DeBarr, vice president Oklahoma State University and head of department of chemistry, holds bachelor and doctor degrees; said that casing-head gasoline is not properly denominated unrefined

naptha, that it is not refining to blend casing-head gasoline with naptha because both products are refined before they are put together; had used casing-head gasoline in a motor car, drove a Ford several hundred miles on compression gasoline, and a Dodge roadster a week or two with nothing but casing-head compression gasoline. The end point would need to be regulated for use by common people in its volatility, but for a man like himself it need not be regulated; that his knowledge would not entitle him to any protection with regard to volatility but the general public needs protection; he would not let his wife run it unless she learned how to use it. Its boiling points are not the proper boiling points and it is not economical motor gasoline. There is both interchangeability and confusion in the use of the names naptha and gasoline; extreme confusion as to the material more properly called gasoline. If the lighter as against the heavier hydrocarbons are too great the car will not run, and vice versa. Many writers call all of the hydrocarbons that are lighter than kerosene naptha, when derived from crude petroleum. Thinks the term unrefined naptha originated with a Bureau of Mines publication and circular, either there or with Bacon and Hamor.

Throughout the trial, during introduction of evidence and in argument, the prosecution insisted that the conduct of the defendant was fraudulent. One of the grounds of this insistent was the fact that the defendant's traffic agent asked for the rate on unrefined naptha, a commodity which had theretofore been and was then being shipped as gasoline to Port Arthur; but in the light of the ruling of the Interstate Commerce Commission in the National Refining Company case, the rate on unrefined naptha theretofore given by one of the carriers to Baton Rouge on a commodity shown to be substantially the same as the condensate of the Gypsy Company's plants, and the testimony in this case, we think the insistence groundless and must have been highly prejudicial. Another fact relied on and pressed upon the attention of the jury was that the same commodity was shipped to Pittsburgh by the Gypsy Company as gasoline after December 2, 1916, while shipments were being made to Port Arthur as unrefined naptha, and its effect upon the jury cannot be doubted, but we think this entirely without evidentiary weight in view of the further fact that there was no rate on unrefined naptha to Pittsburgh. Another error assigned is that testimony was admitted over objection showing that the casing-head gasoline and blended product at other casing-head compression plants in Oklahoma were called gasoline and shipped as gasoline, without a showing that they were substantially similar to those of the Gypsy Company, and in the face of proof that they were not of a uniform blend with those of the Gypsy Company but contained, in some instances, as much as 75% naptha. It is also assigned as error that counsel for the prosecution stated in his argument to the jury that the Mellon Institute at Pittsburgh was founded by the Mellon family, and that Mr. Mellon is president of the Gulf Oil Corporation. The

court said there was no evidence of that kind in the record. This statement could have been made for no other purpose than to prejudice the jury against Dr. Bacon and Dr. Garner, witnesses for defendant. Counsel also stated to the jury that during the time part of the shipments were made the Government was operating the railroads and that it had guaranteed the revenue of the railroads, and that the jury would have to contribute to make up any deficiency in that revenue, that the defendant, by the advantage that it got over its competitors in this way placed in its "own pocket hundreds of thousands of dollars which they were not entitled to and which the people of the United States have got to bear the burdens, and it is true that the Gulf Refining Company will have to join, thank goodness, the other people of the United States to pay these things if it had to be paid." On objection the jury was instructed to ignore the statements. All of the assignments that have been mentioned are in our judgment meritorious, the matters complained of were prejudicial and would require a reversal. Many errors are assigned, to the admission and rejection of evidence, to the instructions of the court, to the refusal of requests to instruct, and to comments by the court during the progress of the trial, which it is claimed were prejudicial and unfair. But the view we take of the case renders it unnecessary to pass on them.

It is our opinion that when all competent and relevant proof in the case is given a fair and impartial consideration the conclusion that the verdict is without support is inevitable. The prosecution rested its case in chief on testimony of operators of casing-head compression plants that they called the condensate and their blended products gasoline, believed they were gasoline and shipped them as gasoline; and also on the claimed admissions about which we have expressed our opinion. They could not ship their products otherwise, there was no rate on unrefined naptha or unfinished naptha 1697 to their points of destination; and as to the shipments to the Texas Company at Port Arthur, on which gasoline rates had been exacted and collected, that company had pending in the U. S. District Court for the Eastern District of Texas at the time of the trial an action for the recovery of the difference between what it had been required to pay and the rates on unrefined naptha. The defendant then called witnesses thoroughly familiar, technically and practically, with the recovery of petroleum and natural gas, their treatment, their component parts, their reduction to usable and marketable commodities, and they were in accord in their testimony that the commodities were appropriately designated as unrefined naptha, were unrefined naptha and were not gasoline, and could not be appropriately so designated. They stated the facts on which their conclusions were based. Then the best informed witnesses in behalf of the prosecution, the only ones who spoke with general information on the subject, Dr. DeBarr and Mr. Dykema, were called and both stated that casing-head condensate was too violatile and dangerous for use as gasoline—the former as a witness and the latter in his

article prepared and issued as an official bulletin by the Bureau of Mines; and neither claimed that either the condensate or the blended  
y product would fulfil any specification for gasoline.

We think the court erred in refusing defendant's request for an instructed verdict in its favor.

Reversed and remanded.

Filed September 11, 1922.

1698

*Judgment.*

United States Circuit Court of Appeals, Eighth Circuit.

September Term, 1922.

Monday, September 11, 1922.

GULF REFINING COMPANY, PLAINTIFF IN ERROR,

*vs.*

UNITED STATES OF AMERICA.

No. 5899.

In error to the District Court of the United States for the Eastern District of Oklahoma.

This cause came on to be heard on the transcript of the record from the District Court of the United States for the Eastern District of Oklahoma, and was argued by counsel.

On consideration whereof, it is now here ordered and adjudged by this court, that the judgment of the said District Court in this cause be, and the same is hereby, reversed without costs to either party in this court.

It is further ordered that this cause be, and the same is hereby, remanded to the said District Court with directions to grant a new trial.

September 11, 1922.

1699 *Application of defendant in error for extension of time to file petition for rehearing.*

[Telegram.]

WASHINGTON, D. C., Nov. 4-22.

E. E. KOCH,

*Clerk Ninth Circuit Court of Appeals, St. Louis.*

Because of important bearing of the decision in Gulf Refining Co. versus United States on reparation claims which may amount to several million of dollars the Interstate Commerce Commission is exceeding anxious that the government file a petition for rehearing Stop We did not obtain copy of opinion until short while ago Stop Will you therefore please ask Court for an order extending time until Dec. first to file rehearing petition.

DAUGHERTY.

(Endorsed): Filed in U. S. Circuit Court of Appeals, Nov. 4, 1922.

*Order extending time to file petition for rehearing until December 1, 1922.*

September term, 1922.

Tuesday, November 7, 1922.

Upon application of the Attorney General of the United States, in behalf of the defendant in error in this cause, and for good cause shown, It is ordered by this court that the time for filing a petition for a rehearing herein be, and the same is hereby, extended until December 1, 1922, and that the issuance of the mandate of this court be, and the same is hereby, stayed pending the filing of said petition and if filed the issuance of the mandate will then be withheld until said petition has been acted on.

NOVEMBER 7TH, 1922.

*Petition of defendant in error for a rehearing.*

*To the honorable the United States Circuit Court of Appeals for the Eighth Circuit and the honorable Judges thereof.*

The United States of America, defendant in error in the above-entitled cause, does most respectfully petition for a rehearing upon the writ of error in said cause and to that end does move said court to set aside and vacate the rulings and orders heretofore made in said cause reversing the judgment of, and remanding said cause to, the said District Court of the United States for the Eastern District of Oklahoma, and does further petition and pray that the said writ of error be further considered by this court, with leave to the defendant in error to further argue and present the same, and that upon a re-submission of said writ of error for decision the said judgment of said district court be affirmed.

And defendant in error respectfully submits the following grounds in support hereof:

1. The evidence in the case was sufficient to require submission of the case to the jury.
2. The evidence in the case supported the verdict.
3. The evidence in the case shows that plaintiff in error was guilty, as charged, beyond a reasonable doubt.
- 1704 4. There was no prejudicial error in the admission or rejection of evidence.
5. The statements made by counsel for the Government in their argument to the jury were not improper and did not constitute reversible error.

6. No error prejudicial to the plaintiff in error, requiring reversal, was committed by the trial court.

Respectfully submitted.

JAMES M. BECK,  
*Solicitor General,*  
WILLIAM D. RITER,  
*Assistant Attorney General,*  
J. STANLEY PAYNE,  
*Special Assistant to United States Attorney,*  
*For the United States.*

Washington, D. C., November 23, 1922.

*Certificate of counsel.*

We hereby certify that in our opinion the attached petition in behalf of the United States of America for rehearing in Gulf Refining Company, plaintiff in error, *vs.* United States of America, defendant in error, case No. 5899, is well founded in point of law, and we further certify that said petition is not interposed for delay.

(Signed) WILLIAM D. RITER,  
*Assistant Attorney General,*

(Signed) J. STANLEY PAYNE,  
*Special Assistant to United States Attorney,*  
*For the United States.*

1702 Dated at Washington, D. C., November 29, 1922.

Subscribed and sworn to before me this 29th day of November, 1922.

[SEAL.]

GRACE MURPHY,  
*Notary Public.*

(Endorsed) : Filed in U. S. Circuit Court of Appeals, Nov. 27, 1922.

*Order denying petition for rehearing.*

December Term, 1922. Tuesday, January 16, 1923.

This cause came on this day to be heard upon the petition for a rehearing, filed by counsel for defendant in error.

On consideration whereof, it is now here ordered by this court, that said petition for a rehearing of this cause, be, and the same is hereby, denied.

January 16, 1923.

1703

*Clerk's certificate*

United States Circuit Court of Appeals, Eighth Circuit

I, E. E. Koch, clerk of the United States Circuit Court of Appeals for the Eighth Circuit, do hereby certify that the foregoing transcript composed of two volumes, Volume I consisting of pages 1 to 950, inclusive, and Volume II consisting of pages 951 to 1702,

inclusive, contains the transcript of the record from the District Court of the United States for the Eastern District of Oklahoma as prepared, printed, and certified by the clerk of said District Court to the United States Circuit Court of Appeals in pursuance of the act of Congress approved February 13, 1911, and full, true, and complete copies of all the pleadings, record entries and proceedings, including the opinion, had and filed in the United States Circuit Court of Appeals, except the full captions, titles, and endorsements omitted in pursuance of the rules of the Supreme Court of the United States, in a certain cause in said Circuit Court of Appeals wherein the Gulf Refining Company, a corporation, was plaintiff in error, and the United States of America was defendant in error, No. 5899, as full, true, and complete as the originals of the same remain on file and of record in my office.

I do further certify that on the thirty-first day of January, A. D. 1923, a mandate was issued out of said Circuit Court of Appeals in said cuase, directed to the judges of the District Court of the United States for the Eastern District of Oklahoma.

In testimony whereof, I hereunto subscribe my name and affix the seal of the United States Circuit Court of Appeals for the Eighth Circuit, at office in the city of St. Louis, Missouri, this tenth day of April, A. D. 1923.

[SEAL]

E. E. KOCH,  
Clerk of the United States Circuit Court  
of Appeals for the Eighth Circuit.

1704      In the Supreme Court of the United States  
October term, 1902

UNITED STATES, PETITIONER,  
v.  
GULF REFINING CO., RESPONDENT. } No. 994

*Stipulation as to return to writ of certiorari.*

It is hereby stipulated by counsel for the parties to the above entitled cause that the certified copy of the transcript of the record now on file in the Supreme Court of the United States shall constitute the return of the clerk of the United States Circuit Court of Appeals for the Eighth Circuit to the writ of certiorari granted therein.

WM. J. HUGHES,  
*For the Solicitor General.*  
JAMES B. DIGGS,  
*Counsel for Respondent.*

**June 29, 1923.**

(Endorsed): U. S. Circuit Court of Appeals, Eighth Circuit, No. 5899. Gulf Refining Company, plaintiff in error, vs. United States of America. Stipulation as to return to writ of certiorari. Filed July 10, 1923, E. E. Koch, clerk.

1705 UNITED STATES OF AMERICA, ss:

*The President of the United States of America to the honorable the Judges of the United States Circuit Court of Appeals for the Eighth Circuit, greeting:*

Being informed that there is now pending before you a suit in which Gulf Refining Company is plaintiff in error and The United States of America is defendant in error, No. 5899, which suit was removed into the said Circuit Court of Appeals by virtue of a writ of error to the District Court of the United States for the Eastern District of Oklahoma, and we, being willing for certain reasons that the said cause and the record and proceedings therein should be certified by the said Circuit Court of Appeals and removed into the Supreme Court of the United States, do hereby command you that you send without delay to the said Supreme Court, as aforesaid, the record and proceedings in said cause, so that the said Supreme Court may act thereon as of right and according to law ought to be done.

Witness the Honorable William H. Taft, Chief Justice of the United States, the twenty-third day of June, in the year of our Lord one thousand nine hundred and twenty-three.

WM. R. GRANSBURY,

*Clerk of the Supreme Court of the United States.*

1707

*Return to writ.*

UNITED STATES OF AMERICA,

*Eighth Circuit, ss:*

In obedience to the command of the within writ of certiorari and in pursuance of the stipulation of the parties, a full, true and complete copy of which is hereto attached, I hereby certify that the transcript of record furnished with the application for a writ of certiorari in the case of Gulf Refining Company, plaintiff in error, v. United States of America, No. 5899, is a full, true and complete transcript of all the pleadings, proceedings and record entries in said cause as mentioned in the certificate thereto.

In testimony whereof, I hereunto subscribe my name and affix the seal of the United States Circuit Court of Appeals for the Eighth Circuit, at office in the city of St. Louis, Missouri, this thirteenth day of July, A. D. 1923.

[SEAL]

E. E. KOCH,

*Clerk U. S. Circuit Court of Appeals for the Eighth Circuit.*

(Endorsed:) File No. 29544. Supreme Court of the United States, No. 994, October Term, 1922. The United States of America vs. Gulf Refining Company. Received July 17, 1923. Office of the clerk, Supreme Court U. S. Writ of Certiorari. Filed Jul. 10, 1923. E. E. Koch, Clerk.

1708 (Endorsed:) File No. 29544. Supreme Court U. S., October term, 1922. Term No. 290. The United States, Petitioner, vs. Gulf Refining Company. Writ of certiorari and return. Filed July 17, 1923.

*End*  
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